THE

AMERICAN REVIEW OF TUBERCULOSIS

ABSTRACTS OF TUBERCULOSIS

VOLUME V JULY, 1921 ABST. No. 4

Abstracts of Tuberculosis *is published at intervals as an integral part of the* **American Review of Tuberculosis.** *It will receive separate paging and may, if desired, be bound separately at the completion of the volume.*

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

Abstracts should be sent typewritten on one side of the page only. They should be as concise and compact as the subject matter of the article warrants. They should be headed with a short title, and followed by the full title of the paper, author's name, journal, date, column and page.

Tuberculosis Mortality in Vienna Before and After the War.—The war has completely upset demographic conditions in belligerent countries by the action of various causes, such as mobilization of men, emigration en masse of refugees, dietetic restrictions, etc. Figures show that in Vienna there has been a great increase in tuberculosis mortality in 1919, as compared with 1913–1914; the death rate in 1919 being comparable to that in 1892–1893. It is interesting to note that the increase has been much greater for women than for men, and the relative increase has been greater in the wealthier sections than in the poorer.

PER 10,000	GENERAL MORTALITY		TUBERCULOSIS MORTALITY	
	Men	Women	Men	Women
1913–1914	165	138	35.5	24.8
1919	213	215	54.5	52.3

—La mortalité par tuberculose à Vienne avant et apres la guerre, L. Cheinisse, Presse méd., December 1, 1921, xxviii, 1611.

Tuberculosis in Germany.—The death rate from tuberculosis in Prussia fell from 26 per 10,000 living inhabitants in 1892 to 13.8 in 1914 and rose to 22.8 in 1918. The increase as regards the whole of Germany is remarkable. Between 1914 and 1919, 100,000 more patients died than might have been expected, calculating from the rates of 1914. In 1913, there were 200,000 cases of lung tuberculosis; in 1918 this figure had risen to 340,000. The *Gesundheitsamt* estimates that there are at present little short of 500,000 cases in Germany. A similar rise in tuberculosis death rates and morbidity rates occurred in England during the war, but compared with the rates in 1892 it is not nearly so striking. An improvement took place in Germany as well as in England after the war. The highest death rate was reached in 1918. Improvement occurred especially in the second half of 1919 and has continued since. Whether the rates will shortly fall to the prewar level, is an open question, but taking into account the present food situation in Germany, it seems unlikely. The fact has to be faced that the present organization of antituberculosis work in Germany is unable to cope with the problem, because of lack of money, and because the German is no longer as docile and as amenable to health regulations as formerly. Besides, the dispensary system has not been effectively organized, especially in regard to treatment and aftertreatment. It is estimated by the *Gesundheitsamt* that only 25 per cent of any new series of cases can get effective sanatorium treatment and probably 50 per cent do not get adequate treatment.—*Tuberculosis in Germany, E. G. Glover, Lancet, April 2, 1921, cc, 715.*

Tuberculosis in New York City

Quarters Ending March 31, 1920 and 1921

		MANHATTAN	BRONX	BROOKLYN	QUEENS	RICHMOND	CITY
Population	1920	2,281,664	747,520	2,038,121	478,571	118,104	5,663,980
	1921	2,276,778	778,520	2,077,674	497,627	121,252	5,751,859
New cases	1920	1,982	406	1,074	178	46	3,686
	1921	1,654	331	817	172	49	3,023
Total cases in register	1920	14,064	3,472	6,741	1,565	266	26,108
	1921	14,502	3,439	6,588	1,436	316	26,281
New patients examined at clinics	1920	1,696	397	1,017	213	30	3,353
	1921	1,827	332	1,169	195	48	3,571
Total visits to clinics	1920	8,542	3,312	5,022	1,461	195	18,532
	1921	8,502	3,185	6,045	1,601	318	19,651
Cases under supervision	1920	108	173	346	1	5	633
	1921	156	56	428	12	10	662
Voluntary renovations	1920	228	85	129	8	30	480
	1921	177	42	42	301	42	604
Sputum examined	1920	5,717	1,701	2,559	509	101	10,584
	1921	5,437	1,371	2,537	536	79	9,960
Positive sputum	1920	1,094	208	487	111	15	1,915
	1921	915	192	442	114	11	1,674
Deaths	1920	899	231	621	151	37	1,939
	1921	708	149	457	96	37	1,447
Death rate per 1000 of population	1920	1.60	1.25	1.23	1.28	1.27	1.39
	1921	1.26	.78	.89	.78	1.24	1.02
Deaths, all forms of tuberculosis	1920	1,044	262	688	171	41	2,206
	1291	812	180	528	109	40	1,669
Death rate per 1000 of population	1920	1.86	1.42	1.37	1.45	1.41	1.58
	1921	1.45	.94	1.03	.89	1.34	1.18

—Weekly Bull., Dept. Health, N. Y. City, June 4, 1921, x, 180.

Mortality from Tuberculosis in Denmark.—Jensen compares the mortality by five year periods from 1890 to date in Copenhagen, in the various provinces, and for the whole country. The total mortality has dropped for the whole country by 31.05 per cent and in the mortality from pulmonary tuberculosis the decline has been 47.12 per cent. In the provinces, the corresponding figures are 29.49 and 54.10 per cent: in Copenhagen alone, 32.84 and 37.22 per cent. The total mortality for the whole country thirty years ago was 19.78 per thousand inhabitants; for the provinces alone, 19.013, and for Copenhagen, 20.782. The corresponding figures now are 13.639, 13.407, and 13.957.—*Tuberkulosedodeligheden, C. Jensen, Ugesk. f. Laeger, January 6, 1921, lxxxiii, 13.*

Deaths and Death Rates from Pulmonary Tuberculosis in New York City and State.—The following table, showing the deaths and death rates from pulmonary tuberculosis for New York City and State, for December, during the years 1913 to 1920, inclusive, is taken from the *Monthly Vital Statistics Review, New York State Department of Health, February, 1921, New Series, vol. i, no. 12.*

Pulmonary tuberculosis: Deaths and death rates, New York State and large subdivisions, December, 1913 to 1920*

MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
						Total		Urban		Rural		Institutional districts	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
December average	1913–17	1,178	137.2	747	160.8	431	109.3	227	118.7	204	100.5		
December	1913	1,195	144.6	728	164.9	467	121.5	220	117.6	247	125.8		
December	1914	1,214	144.1	766	169.6	448	115.4	250	130.9	198	100.6		
December	1915	1,146	133.4	746	160.6	400	101.5	217	113.5	183	90.2		
December	1916	1,164	133.4	742	156.3	422	106.1	228	117.7	194	95.0		
December	1917	1,168	131.0	752	154.7	416	103.3	218	110.7	198	95.8		
December	1918	1,141	126.1	646	129.8	495	121.4	206	102.6	231	111.2	58	
December	1919	906	98.3	506	99.4	400	97.0	171	83.9	184	88.3	45	
December	1920	794	84.7	446	85.7	348	83.4	149	72.1	159	75.6	40	

* Deaths per 100,000 population per annum.

Social Prophylaxis against Tuberculosis.—The essential principle of all prophylaxis is the avoidance of contagion. Contagion is the necessary cause and other factors, such as community and family life, industry, the influence of alcoholism, only act in favoring contagion and in multiplying its sources and opportunities. The importance of infection is combatted by some who point out that 97 per cent of human adults are infected. The difference between those who are diseased and those who are merely infected is essentially a quantitative one, namely, the number of infecting bacilli. The lesser infections which remain latent are inevitable and need not concern us, but we should endeavor to suppress sources of open and abundant contagion. Many maintain that effort should be directed to strengthening the resistance of the individual, but while this is important, the chief factor is to combat the bacillus. Two main methods are indicated, placing a barrier of defense around the sowers of germs and a protection around healthy subjects. The former can be done by compulsory isolation of open cases and also by disinfection of the main source of danger, the sputum. The means of accomplishing this are (1) direct: dispensaries, sanatoria, special hospitals, child welfare, and finally, education; and (2) indirect: alimentary hygiene, the fight against alcohol, the bettering of living conditions, and hygiene in general. The rôle of the physician is most important. Not only must he make an early diagnosis, but also educate the patient and friends in prophylaxis. To do this successfully he, himself, must be convinced of the efficacy of the measures prescribed.—*La prophylaxie sociale de la tuberculose, L. Bernard, Presse méd., December 18, 1920, xxviii, 913.*

Campaign against Tuberculosis in Pennsylvania.—Established about thirty years ago, the Pennsylvania Tuberculosis Society was the first organization formed in this country for the purpose of arousing popular interest in the fight against tuberculosis and of promoting activities for the control and prevention of the disease. During the early years of its history the society worked in a quiet but persistent way. Papers on various phases of the tuberculosis problem were prepared, read and published. From time to time literature was issued for popular distribution. Opportunities were sought for presenting the subject to medical meetings and on other occasions. Efforts were made to arouse health authorities to a sense of their responsibilities in the matter of tuberculosis. The society gradually exerted an influence for tuberculosis prevention in many sections of the state. In 1908 the Pennsylvania society began to make itself known throughout the state. In that year the Christmas seal sale was first used as a method of raising funds for tuberculosis prevention work under the National Association. Since 1908 the Pennsylvania society has gradually developed at least something of an affiliated local organization in every county in the state except two. There are at present about a hundred of these local organizations. Many of them are strong county-wide tuberculosis societies, with paid full time secretaries, doing their work on a budget basis and in a business-like way. In many places the local organization is still a committee of a woman's club. In 1917 the funds of this state totaled about $95,000. There was no seal sale in 1918, when it was omitted at the request of the American Red Cross. But for that year's work throughout the country the Red Cross appropriated $2,500,000. Last year the amount raised for the Christmas sale, exclusive of Pittsburgh and Allegheny County, was nearly $300,000. The Pennsylvania Society confines its efforts very largely to a program of education and propaganda. It has endeavored to keep in line with the program for the country, outlined by the National Association, while at the same time taking into account conditions and needs of the state. It has not found it necessary to engage in clinic work because the state has maintained clinics in every county. Several other lines of activity have been included in the statewide program and in the program of most local organizations. These activities include efforts to make effective the medical examination of school children, periodical examination of industrial workers, education of the rural population through the granges, promotion of open air schools, introduction of the modern health crusade in public and parochial schools as a means of training the children in health habits, and publicity through the newspapers, schools and churches. Locally, the tuberculosis organizations of the state have given exhibits and assisted in maintaining health centres clinics, community nurses and sanatoria; and they have made surveys, and provided nursing service. Much attention is being given to the need for hospital accomodation for advanced cases. The society endeavors to keep before the local organizations the importance of finding early cases, early examination, placing advanced cases in hospitals, care of contacts, training of children in health habits, provision of clinics, sanatoria, open air

schools and nurses and general education on tuberculosis prevention.—*The Educational Campaign Against Tuberculosis in Pennsylvania, A. M. Dewees, N. York M. J., April 20, 1921, cxiii, 608.*

Stigmata of Predisposition to Bone and Joint Tubercle.—An exhaustive review of the literature shows: (1) that persons of red or light colored hair are said to be peculiarly subject to bone and joint tubercle, as well as to other forms of tuberculosis; (2) that there is first a certain pallor—not that present in the developed disease but antecedent to it,—such pallor being a possible sign of weakness due perhaps to deficient food, faulty hygiene, debilitating diseases, trauma, and the like; (3) that an increased access to external noxae is produced by heightened permeability arising chiefly from thinness of the skin,—a view substantiated by Cornet's observation that by rubbing cultures into the skin, tubercle bacilli could be made to traverse unbroken skin without leaving a trace of their passage through it, and to provoke reaction in the corresponding lymph nodes; (4) that ichthyosis predisposes to tubercle; and (5) that there are two nontuberculous nasal affections eminently characteristic of scrofula and surgical tubercle—chronic catarrhal rhinitis and ozena.

Comparison of subjects of bone and joint tubercle with normals

Red hair

Patients with tuberculous bone or joint..... 7.0% of 353 cases
Normal controls..... 3.4% of 610 cases

Freckling

Tuberculous.....	65%	5%
Control.....	57%	3%

Dental caries

Tuberculous.....No significant difference
Control.....

Ichthyosis

421 total tuberculous cases (male 244, female 177)... 7 cases, 1.4%
324 nontuberculous cases..... 2 cases, 0.6%

Further stigmata of predisposition to bone and joint tuberculosis

Ozena

In 404 tuberculous cases..... 0
In 573 controls..... 2

Simple atrophic rhinitis

In 404 tuberculous cases... 16 cases (3.9%)
In 573 controls..... 17 cases (2.9%)

Nasal obstruction

In 404 tuberculous cases.. 92 cases (23.0%)
In 573 controls..... 45 cases (6.2%)

Mentally defective (excluding idiots)

In 350 tuberculous cases... 6 cases (1.4%)
In controls from several large schools Average..... 0.5%

Hypertrichosis

In 246 tuberculous cases.... 6 cases (2.4%)
In 181 normal school boys... 1 case (0.5%)

Squint was found to occur more frequently in tuberculous than in normal adults, but less frequently in tuberculous than in normal chlidren; so that squint may indicate predisposition to adult pulmonary, but not to juvenile osseous tubercle.

The above figures indicate that red hair, freckling, ichthyosis, simple atrophic rhinitis, nasal obstruction, mental deficiency, and hypertrichosis, are stigmata of predisposition to juvenile bone and joint tubercle.—*Stigmata of Predisposition to Bone and Joint Tubercle, W. C. Rivers, Brit. J. Child. Dis., April, July, and October, 1920, xvii, 59, 140, 179.*

Metropolitan Life Insurance Company Sanatorium.—A total of 802 patients was admitted to the Sanatorium during the past two years, while 774 were discharged. Among the tuberculous patients admitted there has been a very satisfactory percentage—64.85—of incipient cases. Of the 342 tuberculous patients discharged during this period, 285 or 83.33 per cent returned to their homes improved, while only 57 or 16.67 per cent were classed as unimproved, or had died. Following such an extensive and devitalizing disease as influenza, it was almost certain that many postinfluenzal cases should be brought to the Sanatorium for study and treatment. Careful questioning has been made of all patients admitted since the epidemic started, to determine whether they had a disease that could be properly termed influenza. It was found that of the admissions during 1919, 154 patients gave a history of having had influenza, and of this number 68 were diagnosed as tuberculous when admitted. Among the majority of the postinfluenza cases, however, tuberculosis was not found to be present, although in many of them a diagnosis of that disease had been made before admission.

Classification of tuberculous patients admitted to the Sanatorium during 1914, 1915, 1916, 1917, 1918, 1919 and 1920:

	1914		1915		1916	
		per cent		*per cent*		*per cent*
Incipient.....	27	27	69	43.67	127	55.46
Moderately advanced..	63	63	83	52.53	92	40.17
Far advanced....	10	10	6	3.80	10	4.37
	100	100	158	100.0	229	100.0

	1917		1918		1919	
Incipient.....	146	66.37	77	52.74	126	66.32
Moderately advanced..	69	31.36	62	42.46	48	25.26
Far advanced....	5	2.27	7	4.80	16	8.42
	220	100.0	146	100.0	190	100.0

	1920	
		per cent
Suspected tuberculosis.....	7	4.37
Incipient.....	101	63.13
Moderately advanced.....	40	25.00
Far advanced.....	8	5.00
Surgical tuberculosis.....	4	2.50
	160	100.0

—Metropolitan Life Insurance Company Sanatorium. Report for 1919 and 1920.

Influence of Trauma on Surgical Tuberculosis.—The question of the influence of trauma on tuberculosis is a difficult one, from the scientific point of view and even more from the practical standpoint, and it often embarasses the physician who is obliged to testify in accident and industrial cases. There undoubtedly exist cases caused directly by trauma, but they are very rare, as for example, those arising from direct inoculation. But almost always the physician is consulted for lesions, most frequently of bones or joints, which are attributed to a contusion or previous sprain. This tendency is due to the fact that it offers a simple pathogenesis and satisfies the desire to attribute misfortune to external causes. One must learn not to attribute to traumatism what is the result of an industrial disease. The previous state of the patient, his habits and the effect of his work on his health must be inquired into, in order to determine whether the accident did not simply reactivate an old lesion. Often one finds out that certain motions were less free or that one leg became tired more easily. On examination one finds a slight muscular atrophy or an adenopathy. If one inquires precisely into the relative dates of the evolution of the lesion and the accident a flaw is often discovered. The fault of correlation is relatively easy to discover, if the traumatism is recent and the lesion an old one, or if the traumatism is old and the lesions recent; but in cases where they are of about the same age it may be very difficult. Broca, while not denying absolutely the possibility of violence being the origin of a tuberculous lesion, believes it to occur only in exceptional cases. Five hundred children with trauma have been followed for a considerable time, none of them having developed the disease. Trauma without a wound cannot originate tuberculosis. It is a clinical fact that a known trauma in a known pretuberculous person almost never is the origin of a tuberculous lesion. Concerning the influence of trauma on osteoarticular tuberculosis, there is no doubt that any trauma is an aggravating factor. From the practical standpoint it is therefore very important to know the condition of the patient before the accident. Another mode of traumatism, the consequences of which it is equally important to know is that which follows straightening of faulty positions due to white swelling. This may produce local reactivation and even generalized tuberculosis with meningitis.—*Influence du traumatisme sur la tuberculose chirurgicale, A. Broca, Progr. Méd., February 26, 1921, no. 9, 91*

Nitrous Oxide-Oxygen Anesthesia in Tuberculous Animals. Due to the great prevalence of pulmonary tuberculosis, an anesthetic that can be used for operative procedures on tuberculous individuals, without producing injury to them, is greatly needed. Only during the last few years has it been fully recognized that a rapid spread of the disease often followed operations on the tuberculous under ether anesthesia, and for this reason clinicians treating cases of tuberculosis generally advised against surgical intervention except under extreme circumstances. Corper, Brown and Petroff, and Rogers showed that repeated ether anesthesia on infected animals does not result in a more rapid spread of the disease process. The conclusion seems warranted that the detrimental influence of ether anesthesia results from purely mechanical factors, and is due largely to aspiration from the apical lesion, usually a cavity, to other areas of the lung, causing aspiration bronchopneumonia. Ether anesthesia not only causes labored res-

piration but increases the secretions, diluting the infectious sputum, and in this way causes a general spreading of the bacteria. Since nitrous oxide and oxygen are less irritating, Rogers performed experiments to determine their effect on laboratory animals artificially infected with tubercle bacilli. Since animals rarely develop the chronic ulcerative type of tuberculosis an exact comparison cannot be made. Thirty-seven male guinea pigs were infected with active tuberculosis: 20 of these were given repeated nitrous oxide-oxygen anesthesia. In one experiment 8 of the 13 controls died from pneumonia before the experiment was completed, while only 3 of the 13 nitrous oxide animals died during the experiment. Of the 4 controls which died after fourteen days all showed tuberculosis of the lungs, liver, spleen and bronchial glands. When the 10 treated and the 4 remaining controls were dissected thirty days after infection, no difference could be noted in the anatomic distribution or extent of their tuberculosis. In the second experiment, the disease was permitted to develop fourteen days and the animals then treated with the gas every fourteen days. Immediately following the last anesthesia, both the experimental and the control animals were killed and sectioned. There was no difference in the amount of involvement in the anesthetized and the control animals. It is therefore concluded that nitrous oxide-oxygen anesthesia, administered daily to guinea pigs suffering from pulmonary tuberculosis, does not influence the development of the disease, neither is it detrimental to the general health of the animal. Since these gases interfere less with respiration and irritate less than ether, they are more suitable for anesthesia in cases of pulmonary tuberculosis and other respiratory diseases. —*Studies in the Effects of Nitrous Oxide-Oxygen Anesthesia on Animals Infected with Tuberculosis through the Respiratory Tract, J. B. Rogers, Am. J. Surg., April, 1921, xxxv*, 44.

Diagnosis and Prognosis of Tuberculosis in Infancy.—In 661 consecutive autopsies on children under two years, at the Infants' Hospital, Boston, 138, 20 per cent, showed tuberculous lesions,—which suggests how often the disease is overlooked clinically. The clinical diagnosis of tuberculosis in infancy is usually based on the existence of the secondary stage of the disease, as for example tuberculous meningitis or bronchopneumonia. Moreover, it is often impossible to tell before autopsy whether the bronchopneumonia is due to the tubercle bacillus or to other organisms. In 374 cases a clinical diagnosis of tuberculosis was made with the following result:

Analysis of 374 cases

	Cases
Diagnosis of tuberculosis made...	374
Total admissions to hospital in same period.....	3100
Diagnosis confirmed.....	291
Diagnosis confirmed by necropsy.	129
Total necropsies in same period...	661
Diagnosis confirmed by subsequent clinical developments....	153
Diagnosis remained unconfirmed.	78
Diagnosis contradicted by necropsy findings.....	5
Diagnosis not made clinically in cases found tuberculous at necropsy.....	9

The frequency of clinical tuberculosis in hospital patients under two years of age is shown by the fact that tuberculosis was diagnosed in 12 per cent of all admissions, and confirmed in 9 per cent. The diagnosis was considered confirmed when tuberculous lesions were found at necropsy or when unmistakable clinical types of the disease developed. No pulmonary manifestation was considered "unmistakable." A diagnosis of tuberculosis was not made unless one of three signs was present: positive Pirquet, interscapular dulness, and d'Espine's sign, and the roentgenogram. Of course, a diagnosis of tuberculous meningitis required confirmation by lumbar puncture. Of the 374 cases, the Pirquet was positive in 181, negative in 111, questionable in 11. The high percentage of negatives is to be explained by the frequency of marked atrophy and anemia. A negative Pirquet in no way rules out tuberculosis in an infant under two years of age. A positive Pirquet at this age is, however, sufficient evidence for a positive diagnosis of tuberculosis. In the primary stage of the disease, a diagnosis of tuberculosis based on a positive d'Espine's sign or on interscapular dulness, or both, will be right in the majority of cases. A negative finding does not rule but tuberculosis. Greatest reliance was placed on the examination of roentgenograms of the chest. The primary lesion is usually not shown, but enlargement and caseation of the bronchial nodes can be seen. Acute miliary tuberculosis of the lungs can usually not be demonstrated. Tuberculous bronchopneumonia invariably shows in roentgenograms, though not always recognizable as tuberculous. Roentgenograms of the chest were positive in 70 per cent of the cases; positive or suspicious in 89 per cent; and negative in 11 per cent.

Outcome in 369 cases diagnosed as tuberculosis

	Cases
Died in hospital	194
Discharged living	175
Present condition unknown	50
Present condition known	125
Died after discharge	82
Alive and well	43

The tendency to develop the fatal forms of the secondary stage is greatest in infancy, and grows less as the child grows older.—*The Diagnosis and Prognosis of Tuberculosis in Infancy, C. H, Dunn and S. A. Cohen, Am. J. Dis. Child., February, 1921, xxi,* 187.

Surgical Tuberculosis in Infants.—In a thirty years' pediatrics experience no cases of mesenteric adenopathy, or of tuberculous peritonitis in infancy, were seen. Multiple disseminated subcutaneous abscesses were found to be quite common in infants, the growth of pyogenic organisms being favored by the presence of tuberculosis. Subcutaneous gummata were so frequent as to be an excellent sign of tuberculous impregnation. Only one or two cases of tuberculosis of the lymphatics were found in nurslings, the process being commoner after the first year. Tuberculous infection of the epididymis and testicle was found in several cases six months to two years of age. One case of cervical Pott's disease and one of mid-dorsal Pott's in babies eleven and twenty-one months old; one case of tuberculous knee-joint in an infant of thirteen months, and two others in infants twenty-one months old, each, are reported. Mention is made of a dozen cases of tuberculous rickets, emphasized that this does not mean rickets being in tuberculous infants.—*Brief Considerations of Surgical Tuberculosis in Infants, C. G. Cumston, Brit. J. Child. Dis., October to December, 1920, xvii, 189.*

Tuberculosis in Infants and Young Children.—Of 8,919 sick children admitted to the Babies' Hospital (New York) between April 1, 1914 and April 1, 1920, 359, or 4 per cent had symptoms of tuberculosis in some form. Three others had tuberculous lesions at necropsy which had not been suspected during life. Of 2024 necropsies performed during these six years, 184, or 9 per cent were on tuberculous subjects. In 1909 this percentage was 13. In 1914 it was 16. The total death rate for all admissions to the Babies' Hospital had decreased, while the death rate for cases of tuberculosis has increased. More tuberculous patients were admitted between February and June than during the second half of the year. Their number increases as that of other respiratory infections subsides, the tuberculous infection probably being lighted up by preceding acute respiratory troubles. A definite history of exposure was obtained for only 94 of the 362 children. Twenty-two of 29 children whose mothers were tuberculous died before they were one year old, 6 died in second year and 1 in the third. Only 16 of the 37 whose fathers had tuberculosis died before they were one year old. The 362 children ranged from six weeks to five years. The greatest frequency was noted in children between six and twelve months of age. Two hundred and sixty-nine, or 74 per cent, gave a positive Pirquet reaction. Fifty did not react. In 43 cases the reaction was not recorded.

Clinical forldins:	*Cases*
Tuberculous meningitis	193
Pulmonary and general miliary tuberculosis	116
Tuberculous peritonitis	28
Tuberculosis of the bones	12
Tuberculous cervical adenitis	10
Intestinal tuberculosis without peritonitis	2
Tuberculosis of the penis and inguinal glands	1
Total	362

Clinical forms:

Tuberculosis primary in the respiratory tract:	
Cases with oldest lesion in lungs	74
Calcareous areas in lungs	3
Cavities	40
Primary lesion in left upper lobe	16
Primary lesion in right upper lobe	17
Primary lesion in right lower lobe	13
Primary lesion in left lower lobe	16
Primary lesion in right middle lobe	11
Primary lesion in bronchial nodes	57
Tuberculosis primary in the digestive tract	9

Tuberculous meningitis was present in 53 per cent of cases in this series. None recovered. Thirty-nine per cent were under one year; 76 per cent were under 2 years. Necropsies were performed in 123 cases. In 116 the primary lesion was found in the respiratory tract, in the intestines and mesenteric nodes. In babies under six months old, the average number of organs containing tuberculous lesions was 9. There were 28 cases of tuberculous peritonitis. Only 5 came to necropsy. Laparotomy was done on 3 cases, and tuberculous masses were reported in the abdomen of each. The heart is rarely involved in tuberculosis of young children. Exudative tuberculous pericarditis is very rare, occurring in 1 case

among the 184 necropsies studied. Tuberculides were found in only 4 cases of the series. All had a very generalized tuberculosis. The 3 youngest died of tuberculous meningitis.—*A Study of Tuberculosis in Infants and Young Children, Martha Wollstein and R. C. Spence, Am. J. Dis. Child., January, 1921, xxi, 48.*

Tuberculosis of Children.—Hans Much has for a number of years been the chief exponent of absolute immunization against infection. Not many men are willing to support Much in his premise that an absolute immunity against tuberculosis can be secured. Most physicians will agree to a relative immunity; a few would be unwilling even to admit this; but not many American physicians will follow Much in his extreme point of view. Of course, it should be borne in mind that Much is dealing largely with the problem of tuberculosis in children and of childhood infection. He believes that the fight against tuberculosis should be carried on chiefly in its greatest stronghold—childhood. "Tuberculosis in childhood must be cured," he says, "Practically nothing has been done before. Our method of campaign up to date has been entirely wrong." As to the treatment: "It must be expected that the cure of tuberculosis is entirely dependent upon immunity. When properly used, chemical, physical, dietetic, or surgical measures all have the one purpose: to improve the immunity and thereby to conquer the disease." Based upon these assumptions Much has developed a form of treatment which he calls the partigen (partial antigens) treatment. He is also very emphatic in his belief that no tuberculin, no serum, no specific method of any kind is of use that does not take into consideration all of the antigens.—*Tuberculosis of Children, by Dr. Hans Much, Director of the Department for the Science of Immunity and for Tuberculosis Research, University of Hamburg, Germany. Translated by Dr. Max Rothschild, San Francisco. Published by MacMillan Company, 1921, 156 pp.*

Course of the Tubercle Bacillus from Sputum to Child.—That human sputum is the chief source of tuberculous infection is generally admitted, but there is considerable divergence of opinion concerning the immediate medium of infection. The hypotheses of Cornet, Flügge and Aufrecht have gained the widest acceptance. According to Cornet and Flügge infection takes place almost exclusively indoors, either by indirect infection or direct from person to person. Both viewed raw sputum as insignificant. According to the third hypothesis, everything containing tubercle bacilli and passing human lips can set up an infection either by inhalation or by ingestion. Tuberculous sputum can arouse infection, whether inhaled or ingested as suspension, spray or dust or in its natural crude condition. The early rapid tuberculization of the species is an established fact. In many young children the source of infection cannot be traced, if the direct contact with coughing consumptives is taken as a *sine qua non*. About 10 per cent of children exhibit infection by the end of their second year; at three years from 15 to 20 per cent; by six years from 50 to 60 per cent; and by 15 about 75 per cent. Most children spend a larger part of their time out-of-doors at the period from four to seven than at any other period of life. Infants come into closest physical contact over long period with certain individuals and live largely on milk, perhaps cow's milk; yet the total result is an infection incidence of only 10 to 20 per cent. It seems amazingly small; yet it probably represents the relative importance of dust plus droplet plus cow's milk in the scheme of tuberculous infection. We cannot explain infection scientifically; yet the most abundant immediate source of tuberculous infection should be given its due place. Raw sputum, recently expectorated, bespatters the streets everywhere, and the floors in too many places. Children at home live and play close to the floor; outdoors they engage for the most part in "ground" games. Doing so, they cannot help attaching to their hands the offal of sidewalks and streets and with this, the sputum of many people, and since few children have developed a conscience about putting their hands into their mouths, considerable raw sputum will find its way there. Cervical lymphadenitis is the most frequent manifestation of clinical tuberculosis between the ages of three and ten. Foci in the neck nodes undoubtedly represent infections that occurred by way of mouth or nose. Studying large series of cases, observers have been able to detect a tuberculous infection incidence of 5 per cent in tonsils and adenoids which showed no gross evidence of tubercle. This 5 per cent must be regarded as the minimum of tonsillar and adenoid infection in the patients in question. This high incidence of nasopharyngeal and cervical infection in childhood should establish a common locus of early infection. —*The Course of the Tubercle Bacillus from Sputum to the Child, A. K. Krause, N. Y. State J. of Med., March, 1921, xxi,* 83.

Apex, Hilum and Lower Lobe Lesions of Tuberculosis in Childhood.—From evidence reviewed it appears probable that

in the young child there exists a physiologic cause which predisposes the hilum of the lungs to tuberculous infection, namely, the low resistance to tubercle toxin and the consequently greater dependence on the lymphatic system to combat the infection. On the other hand, there is an anatomic cause for the comparative immunity to infection of the lung apex, in the greater respiratory excursion and freer circulation in the child as compared with the adult. In accordance with these phenomena, tuberculosis in the child may be diagnosed most frequently at the hilum, the apex being next in frequency, and the base least often.—*Apex, Hilum and Lower Lobe Lesions of Tuberculosis in Childhood: Their Relative Frequency, W. R. Vis, J. Am. M. Ass., April 23, 1921, lxxvi, 1156.*

Radiologic Diagnosis of Pulmonary and Glandular Tuberculosis in Children.—Clinical diagnosis of thoracic glandular tuberculosis in infants should in all cases be confirmed by radiologic examination. The latter clears up, especially the condition of the hilum and the mediastinum. In the frontal position the shadows of the hilum overlap the mediastinal shadows to the right and to the left, while the central shadow represents the projection of the sternum, the large vessels and the spine. We recognize three stages of hilum disease. In the first stage the shadows hardly extend beyond one or two intercostal spaces, the right one being more extensive and apparent than the left; in the second stage the shadows of the hilum are more entangled with the adjacent shadows and always more hazy, and tend to resemble stumps. Sometimes there are clear areas on each side of the median shadow which gives the general appearance of a butterfly with its wings spread out, although this characteristic may be unilateral. In the third stage, the shadows of the hilum are clear cut, their ramifications are darker and are reinforced by small calcifications, either grouped in small constellations or scattered. They are more extensive and may reach as high as the clavicle or down to the diaphragm. Sometimes there are present aberrant or isolated calcifications quite removed from the hilum, either at the bases or in the lateral portions or in fact anywhere in the chest. These take on a peculiar significance. It has been argued by Ribadeau-Dumas and Debré that the primary infection of pulmonary tuberculosis in infancy is marked by a tubercle varying in size from a pin point to that of a pea, located frequently subpleural in one of the lower lobes. This "tuberculous chancre" may become the origin of tracheobronchial adenopathy.—*La diagnostic radiologique de la noberculose ganglio-pulmonaire chez l'enfant, H. Mery, G. Detre, and A. Mezmoulins, Presse méd., March 19, 1921, xxix, 221.*

Chronic Tuberculous Hilum Pneumonia in Children.—Summary: 1. Extensive tuberculous lesions about the hilum, which pursue a rather chronic course, may may occur in infants and young children. (2) Recovery probably takes place in the majority of these cases even in children under two years of age. (3) The onset in this type of pulmonary tuberculosis is more or less gradual and there may be no lung signs until after the disease has lasted for some time. (4) Irregular fever, sweating, expiratory obstruction, diminished breathing, with impaired resonance, a positive Pirquet and a characteristic roentgen ray picture are among the earlier manifestations. (5) Enlargement of the supraclavicular lymph nodes, positive results from guinea pig incoulation of material from lung puncture or of sputum, and the presence of tubercle bacilli in the sputum may be found later in the course of the disease. (6) Given an infant or child with prolonged irreguar fever and sweating, showing a positive Pirquet, this form of tuberculosis should be suspected and its further early manifestations sought for.—*Chronic Tuberculous Hilus Pneumonia in Children, D. Greenberg, Am. J. Dis. Child., January, 1921, xxi, 65.*

Complement Fixation for Tuberculosis in Children.—The results of 1855 tests on 1556 children are given. In manifest tuberculosis there was a striking relation between the age of the child and a positive fixation reaction. More than eighty per cent of those over six years of age gave positive reactions, while none in the first year reacted positively. The younger children may have had the infection too short a time for the development of complement-fixing antibodies: or, more likely, young animals may form antibodies much less readily than older ones. This may have some relation to the rapid spread of the disease at this time of life. Thus, in younger children the skin test means more and the fixation test less. In older children the reverse is the case. The fixation test is of great aid in the diagnosis of masked juvenile tuberculosis, that is, active, pathological tuberculosis which does not produce well defined clinical symptoms. Such a conditon, though it may at first escape detection by careful physical examination, may in some cases produce an active, readily recognizable tuberculosis. No patient giving a positive

reaction should be considered free from active tuberculosis without a thorough study.—*Complement Fixation for Tuberculosis in Children, J. V. Cooke, Am. J. Dis. Child., January, 1921, xxi, 78.*

Early Diagnosis of Tuberculosis of the Tracheobronchial Glands in Children.—Tuberculosis of the tracheobronchial nodes is the predominant lesion in children and much more important than pulmonary tuberculosis. For this reason early diagnosis is most important so that proper treatment can be instituted. These nodes are the starting point for the distribution of bacilli to other organs and probalby for the invasion of the lung by a retrograde route. The family and personal histories are of importance but only clinical examination and careful study of the physical signs can give exact information. The examination should be commenced by looking for general symptoms arising from a possible tuberculization of the organism: loss of weight, pallor, enlargement of cervical, axillary or inguinal nodes, etc. Then inquiry is made as to functional symptoms, especially cough, harsh, dry, and spasmodic. In the physical examination inspection does not furnish much help except when revealing enlarged veins on the front of the chest. Percussion may reveal altered resonance in the parasternal regions, such changes being more easily made out in front than posteriorly. In contradistinction to this the changes found on auscultation are more marked behind than in front and consist in modifications of breath sounds or of the transmitted voice. D'Espine's sign is of marked significance, as is also the feeble inspiration which extends out beyond the hilum, sometimes over the greater part of a lung. Some authors dispute the importance of this feeble inspiration but there is general agreement as to the significance of rough and low inspiration (inspiration rude et basse). In addition to the more permanent râles there may be transitory adventitious sounds caused by congestion in the neighboring lung tissue. The clinical examination should be controlled by X-rays and, if possible, tuberculin reactions.—*Le diagnostic clinique précoce de la tuberculose ganglio-pulmonaire chez l'enfant, H. Méry, Presse méd., December 4, 1920, xxviii, 873.*

Quasi-Continuous Temperature Records in Early Diagnosis.—The quasi-continuous (half minute) temperature record is a valuable diagnostic indication of the tuberculous nature of the disease, the activity of the process and the prognosis. While the temperature may give some indication of the tuberculous nature of the type of the disease, such as acute miliary tuberculosis, caseous pneumonia and the chronic fibroid type, the physical signs afford considerably more specific information. The temperature indications as to the resistance or lack of resistance of the tissues of the patient are of extreme interest, especially in regard to prognosis. Instability of the temperature affords evidence of a high toxic absorption, ready reaction of the tissues to the toxic stimulation and marked interference with the rest function of the patient. A restless night is reflected in the temperature curve, and it appears that the inverse temperature is to a large extent the result of a continued autoinoculation, during which a minimum stimulus produces a maximum reaction, both as to amount and duration. The features in these quasi-continuous records on which stress is laid as being of diagnostic value are somewhat sudden rise of the afternoon and evening temperature, not necessarily steady, but in jerks and with a general trend upwards; continuation at a relatively high level, above 99°F. for eight or ten hours, followed by a rapid fall, sometimes to a subnormal level; during the whole day, response of the temperature to agents inducing rise or fall: exercise, food, cold or warm drinks, much more readily and through a much wider range than in the healthy individual. A combination of certain of these is called a plateau, namely, a long continued temperature above 99° F. commencing with a sudden rise and ending with a sudden and prolonged descent. This is pathognomonic of tuberculosis. In all the authors' doubtful cases in which the patient ultimately did badly, this plateau temperature curve developed during the early stage of the disease. An account is given of 9 cases and a record of 23 charts which form corroborative evidence of the diagnostic and prognostic value of these records. In the night sweats there is evidence of some interference with autonomic nerve centres, leading to dilatation of the surface blood vessels, great radiation of heat from the cutaneous surface and rapid lowering of the temperature. A series of temperatures taken by mouth bore little relation to the rectal temperatures. They give little indication of the extent or progress of the disease, or in its earlier stages, of its presence.—*The value of the Quasi-Continuous Temperature Record in the Early Diagnosis and Prognosis of Tuberculosis, G. Woodhead and P. C. Varrier-Jones, Lancet, March 19, 1921, cc, 573.*

Presumptive Evidence Furnished by the Habitus and the Skin.—There are a certain number of signs drawn from the habitus of a person which indicate a tuberculosis predisposition or the beginning of an invasion: slender bones, slight development of the musculature in general and atrophy of certain groups of muscles, especially the trapezial and the pectorals, long narrow chest and winged scapulae. Myoedema of the pectorals is found in the cachectic, in convalescents from cholera or typhoid fever, and in the cancerous. The cheeks are flushed, the eyes moist and the corneae transparent bluish. Individuals with red hair were considered to be predisposed by Hippocrates. As a matter of fact it is the "partially red," as for example those with black hair, but red beard and red pubic hair who seem most predisposed. According to Queyrat's statistics, there were only 3 tuberculous out of 12 with complete red hair, but out of 56 individuals who were partially red 52 were tuberculous. The relation between a hypertrichosis and the development of tuberculosis has long been noted. Cervicodorsal or interscapular hypertrichosis is of the greatest importance. Changes in the nails which become thinner, less resistant, more fragile or show transverse ridges, are characteristic. The skin becomes pale, often dry; there may be keratosis pilaris or xeroderma, particularly in the region of the posterior brachial region. In later stages the skin desquamates. Hyperplasia of the mammary glands is noticed in girls. Certain cicatrices are characteristic. Tuberculous sores are more or less deep, irregular, crossed by filaments generally adherent to the underlying tissues and often keloid. Fragments of keloid inoculated into guinea pigs produced tuberculosis. The retraction of the palmar aponeurosis—Dupuytren's disease—may be considered presumptive evidence of tuberculosis. Very large tonsils are suspicious, as is a red line on the gums. Certain dermatopathies are found in the tuberculous, exclusive of the frankly tuberculous lesions, namely, pityriasis versicolor, keratosis pilaris, a number of eczemas, lichen scrofulosorum, parapsoriasis of Brocq, interscapular telangiectases, hyperpigmentations, angiokeratomata and purpuric spots.—*Présomptions de tuberculose tirées de l'habitus exterieur et de l'examen de la peau, E. Queyrat, Progr. Méd., November 6, 1920, no. 45, 487.*

X-Ray in Diagnosis.—At the Municipal Tuberculosis Sanatorium, Chicago, 1236 chests were examined stereoscopically in 1920 and 1431 chests were fluoroscoped. These examinations helped very materially in differential diagnosis, in establishing the indications for pneumothorax treatment and as a guide during the course of such treatment, in affording an opportunity for the study of the topography of the lesion and in determining its activity, in the diagnosis of latent lesions and in the diagnosis of pulmonary lesions at the very beginning.—*The X-Ray in the Diagnosis of Pulmonary Tuberculosis, A. J. Hruby, Am. J. Clin. Med., April, 1921, xxviii, 228.*

The Urochromogen Reaction in Surgical Tuberculosis.—Klare has been applying the urochromogen test in all his cases of surgical tuberculosis for the last two years, and reports that what Weiss states in regard to the significance of urochromogen in pulmonary tuberculosis holds good in the main for surgical tuberculosis. The continual demonstration of urochromogen is to be regarded as indicating a very unfavorable prognosis, and while patients presenting a transitory urochromogen reaction may live for several years they have no prospects of recovery. Thirty of his cases (18 soldiers and 12 children) gave a positive urochromogen reaction. Of the 18 soldiers, 12 died within a year; and the others 6 have not improved. Of the 12 children, 4 died within a year; the condition of the other 8 is either unchanged or worse. In only one case has there been any improvement. In the progressing cases, the intensity of the urochromogen reaction has increased. A persisting positive urochromogen reaction with a tuberculous joint process is sufficient indication for amputation.—*Über die Bedeutung der urochromogen Reaktion für die Prognose der chirurgischen Tuberkulose, Klare, Münch. med. Wchnschr., May 28, 1920, lvii, 635.*

Albumin, Lymphocytes and Tubercle Bacilli in the Sputum.—Takeuchi examined 132 sputa, 77 of which contained tubercle bacilli. The positive and negative groups were both examined for albumin, lymphocytes and eosinophiles. There was a conspicuous difference in the relation of these substances. In the positive group, albumin, a preponderance of lymphocytes and eosinophiles were all found in 71.4 per cent; and albumin, a preponderance of lymphocytes, but no eosinophiles, in 11.4 per cent. Among the negative sputa, which were not necessarily nontuberculous, albumin, lymphocytes and eosinophiles were usually not present. The ratio of instances where albumin, lymphocyytes and eosinophiles were present in the negative group was 9 per cent. The conclusion is drawn that in a sputum which contains

albumin, a preponderance of lymphocytes should be suspected to be tuberculous even if tubercle bacilli are absent, and if eosinophiles are present the suspicion is strengthened, as tubercle bacilli, albumin reaction and a preponderance of lymphocytic cells in sputum maintain a parallelism, while eosinophiles go parallel with these three to a certain degree.—*Albumin, Lymphocytic Cells and Tubercle Bacilli in the Sputum, K. Takeuchi, N. York M. J., April 20, 1921, cxiii, 574.*

Tuberculin Reaction During the Menses.—Coulaud presents evidence that the menstrual periods and the menopause represent periods of lessened resistance to tuberculosis, like childbirth. His data also show that these three, parturition, the menopause and the menses, are periods of extra activity on the part of the thyroid. The response to the skin tuberculin test is less pronounced during these periods of energy. This hyperthyroidism can be effectually combated by ovarian treatment, which seems to rest the thyroid. It may likewise exert a favorable influence on the tuberculosis. Jacquerod has reported its success in combating hemoptysis and menstrual fever in the tuberculous. Everything seems to show that intensive functioning of the thyroid body is an important factor in the weakening of acquired immunity. And we know that the thyroid strives to function more to make up for any loss of ovarian functioning.—*La cuti-réaction à la tuberculose pendant les règles et apres ovariotomie, E. Coulaud, Bull. et mém. Soc. méd. d. Hôp., February 17, 1921, xxxvii,* 155.

A New Method of Staining the Tubercle Bacillus.—The method, already employed in Germany during the war under the name of Keurich's method, gives remarkably constant results and is economical of time and reagents. (1) Slow process: (a) stain slides twelve hours in cold Ziehl solution, or five minutes in hot; (b) freely wash in water; (c) plunge slide into a 10 per cent solution of sulphite of soda until completely decolorized; (d) after rapid washing, counterstain in methylene blue. The advantages of the method are a complete decolorization of the slide, and the impossibility of decolorizing the bacilli, even after several hours immersion in the sulphite solution. (2) Rapid process: (a) stain with Ziehl, cold, for 5 or 6 minutes; (b) wash and decolorize with 10 per cent sulphite solution; (c) counterstain with 1 per cent malachite green or with methylene blue. Histological sections may be stained in the same way and the tissues less altered by the sulphite of soda than by the ordinarily used nitric acid. Comparisons made with acid and alcohol decolorization show the method described to be equally satisfactory.—*Une nouvelle méthode de coloration du bacille de Koch, Durupt, Presse méd., January 1, 1921, xxix, 5.*

Tubercle Bacilli in the Blood of Tuberculous Patients.—This question has been dealt with by several investigators. Two methods of investigation have been followed. The first, the microscopic examination of the blood, is open to the objection that the finding of acid-fast bacilli is not proof that they are tubercle bacilli. The second method, that of inoculating the blood into susceptible animals, is the only convincing one. Previous investigations have established that the presence of tubercle bacilli in the blood of tuberculous patients is rare and so capricious in its occurrence, that no rule can be laid down as regards its relation to the various manifestations of tuberculosis. The technique followed by the author consisted in the drawing of 10 cc. of blood from the vein of a patient and inoculating it intraperitoneally into a guinea pig. More than 80 experiments were made. All the pulmonary cases had positive sputum. The surgical cases were such as to leave no doubt as to their nature; they were all undergoing sanatorium treatment and their general condition was fairly good. The following varieties of patients were tested: those with pulmonary lesions and pyrexia, whose blood was taken during the fever or two hours before the onset of fever; those with surgical tuberculosis, without fever and with fever; those with pulmonary tuberculosis without fever; milk of women with tubercle bacilli in their sputum. Out of 84 experiments positive results were obtained in only 10 cases, while 2 were doubtful. These 12 were cases of pulmonary tuberculosis with temperatures varying daily between 97° and 99.5° F. Control experiments were undertaken with the blood of tuberculous patients during pyrexia, to see whether it possessed bactericidal properties. No such evidence was obtained.—*Are Tubercle Bacilli Present in the Blood of Tuberculous Patients? A. Distaso, Tubercle, March, 1921, ii, 251.*

Pleural Effusion on the Healthy Side in Artificial Pneumothorax.—Effusion in an artificial pneumothorax cavity is very frequent but up to the present only two cases have been reported where this occurred in the opposite pleura. Two further cases of this kind are reported in which the patients survived and the pneumothorax

treatment could be continued. The following conclusions are drawn: (1) Effusion on the opposite side is an independent complication and is not caused by irritation of the mediastinal pleura. (2) Such effusions are serious but not necessarily fatal. (3) The evolution of such pleurisies is identical with that of ordinary pleurisy. (4) Treatment should be symptomatic.—*Pleurésie exsudative du "côté sain" chez deux malades traités par le pneumothorax artificiel, L. de Reynier and G. Rossel, Rev. méd. de la Suisse Rom., March, 1921, xli, 169.*

Repeated Hemoptysis Caused by a Calculus.—The expulsion of calculi in the sputum is not uncommon and may be accompanied by small haemorrhages. The following case is cited as having particular interest and possibly explaining some cases of repeated hemoptyses: A young woman, who was under observation for about nine years, had repeated hemoptyses in spite of treatment with coagulants, artificial pneumothorax, tuberculin, etc. The lungs showed practically no abnormality, except on the X-ray plate, some enlargement of the left hilum shadow and two small well defined spots. Finally a calculus was expectorated and the X-rays showed the disappearance of one of these spots. After this the hemoptyses ceased. The author believes that this calculus, the result of an old cicatrized tuberculous lesion, was the cause of the hemoptyses in the same way as a foreign body may be.—*Hémoptysies à répétition provoquées par la présence d'un calcul, M. Jaquerod, Rev. méd., de la Suisse Rom., March, 1921, xli, 166.*

The Old and New Conceptions of Scrofula.—Professor Marfan delivered a lecture on this subject last January at the Hospital for Sick Children, Paris, an abstract of which appears in the *Journal de médicine de Paris* of March 20, 1921, xl, 8. The older view of scrofula obtained unmodified until toward 1880, its leading manifestations then comprising enlarged lymph nodes, scrofulous facies, blepharitis, keratitis, otorrhea, fungous disease of the joints, etc. The change was brought about by the introduction of bacteriology, which science soon showed that the majority of these lesions were due to the ordinary pyogenic cocci. The enlarged lymph nodes in the neck were often due to the tubercle bacillus and the tracheobronchial glands were invariably of this origin; there was a tuberculous caries of bone and various tuberculous processes in the skin. But these tuberculous manifestations comprised under the head of scrofula were notably benign, and their presence did not indicate that the subject would be phthisical in after years. On the contrary, the presence of these lesions seemed to predicate a certain amount of natural or acquired immunity to the bacillus. But under the age of five years the cutireaction is positive and violent. Certain obstinate and obscure dermatoses are regarded by some observers as tuberculides while others look upon them as due to pyogenic cocci. The young scrofulous child is very apt to show the association of a slight degree of rickets and this suggests that diet should play an important rôle in the treatment.—*Editorial, Med. Rec., May 14, 1921, xcix, 838.*

Spontaneous Pneumothorax.—Spontaneous pneumothorax, though usually considered as a concomitant of advanced tuberculosis of the lungs, may occur in but slightly or moderately advanced cases. It is a misconception to think that this condition is produced only by ulceration through a cavity wall into the pleural sinus; it may quite as likely be the result of a tear into the lung tissue at the site of a pleuritic adhesion.

This may be brought about by sudden exertion, as coughing or sudden or undue physical effort; a tear results and, with air escaping from the lung, a pneumothorax is produced. Spontaneous pneumothorax occurs occasionally in cases in which an artificial pneumothorax has already been produced; here, ulceration through the thin cavity wall into the pleural cavity makes the case an open one; the accident is usually painless. In all cases of pulmonary tuberculosis, sudden pain after exertion, as coughing or other violent muscular exercise, should immediately challenge the attention of the physician. Again, dyspnea should never be regarded as an ordinary concomitant of pulmonary tuberculosis. Its advent should always be considered as an urgent indication for a complete survey of the chest. Spontaneous pneumothorax is far more common than is usually supposed.—*Spontaneous Pneumothorax, E. A. Gray, J. Am. M. Ass., April 23, 1921, lxxvi, 1147.*

Dental Caries and Tuberculosis.—Paul Ferrier has made the following statements: (1) Demineralization of the bones has a corollary dental demineralization. Both are decalcification. (2) Tuberculosis shows more decalcification than other general diseases. (3) Dental decalcification is found in the tuberculous as well as the pretuberculous, as multiple caries presenting certain clinical peculiarities. In general the tuberculous have less resistant teeth and show more caries than nontuberculous

individuals of the same station in life. Lemoine and Jean-Paul Ferrier do not accept this latter statement, but the author criticizes their control cases as these were chosen from a clinic for mouth diseases. His own observations show that 33 per cent of tuberculous patients have dental deficiencies, while controls from medical cases showed only 28 per cent, and from surgical cases 20 per cent. He considers that the state of the teeth furnishes help in prognosis as indicating the calcification of the patient.—*Fréquence comparée de la carie dentaire chez les tuberculeux, P. Fargin-Fayolle, Presse méd., January 15, 1921, xxix, 44.*

Pleuropulmonary Tuberculosis and Chronic Tuberculous Pericarditis.—The patient, a painter twenty-five years of age, came to the hospital January 5, complaining of severe pains in the left chest of several weeks' duration. Cough began in 1918, while the patient was in military service. He had then been treated for five months for right-sided pleurisy. He had since lost about 18 kgm. Family history is negative. Clinical examination reveals slight cyanosis of the lips and extremities; pulse small, 100 to 120 a minute. There is less movement of the right than of the left lung apex, slight impairment of note with increase of resistance in the supra- and infraclavicular fossae, the supra- and infraspinous fossae and the right scapulovertebral space, and rough breathing over the right apex anteriorly and posteriorly. There is a pleural friction rub in the fourth and fifth intercostal spaces anteriorly and to the right. Examination of the heart reveals enormous enlargement, absence of heart impulse, faint heart sounds and pericardial friction rub. On X-ray examination the heart is very large, the outlines irregular, the apex fixed, the pericardium adherent to the diaphragm, the lungs show increased shadow density over the right apex, decreased mobility of the right diaphragm, and marked shadows indicating hilum adenopathy. Pericardial puncture reveals 1 cc. of fluid which was clear at first, later tinged with blood. Cytological examination of this fluid shows red cells and a few small lymphocytes. The absence of an acute infection makes the diagnosis of tuberculous pericarditis probable. Chronic tuberculous pericarditis presents well known clinical and anatomical characteristics. The mediastinum is always involved and there are adhesions between pericardium, pleura and vertebral column. There may be clear fluid or caseous material between the layers of the pericardium. The heart is not always enlarged. There is enlargement of the liver with congestion and more or less sclerosis. Pulmonary, cardiac or hepatic complications supervene. The outcome is always fatal although the evolution of the disease itself may be very slow. The treatment is purely symptomatic.—*Tuberculose pleuro-pulmonaire avec péricardite chronique tuberculeuse, Daco, Liege Méd., February 19, 1921, xiv,* 240.

Tuberculosis of the Heart.—A case is reported in which a tuberculous focus was situated in the wall of the left auricle, and had invaded the mouths of the pulmonary veins, the interauricular septum, and the rings of the auriculoventricular orifices. There were areas of caseation, and tubercle bacilli had been demonstrated. The lesion was apparently primary, and no tuberculosis was found elsewhere in the body. The history was of two months' duration, and the signs during life were those of hypertrophy and dilatation of the heart without murmurs. Of 41 cases of tuberculosis of the heart seen by the author, records showed that only one had so extensive a lesion.—*Reported at Meeting of Section for the Study Disease in Children, Royal Society of Medicine, by Dr. T. H. Gunewardene, Brit. J. Child. Dis., April–June 1920, xvii, 91.*

Dextrocardia Due to Right-Sided Pleuropulmonary Lesion.—Attention has frequently been called to the displacement of the heart towards the right by leftsided pleurisies but little attention has been paid to the pulling of the heart to the right side by sclerosis of the pleura or of the lung. Five cases of dextrocardia from this cause were observed by the authors in less than a year; in two the condition was complete. No especial symptoms were caused by the displacement.—*Dextrocardie acquise par lésion pleuro-pulmonaire droite, Papillon and Flipo, Presse méd., October 9, 1920, xxviii, 716.*

Healed Case of Tuberculosis of the Peritoneum.—A soldier of 21 suffering from tuberculous peritonitis received several tappings and in addition heliotherapy, but every time the abdominal cavity refilled promptly. The patient complained of abdominal distress and diarrhea, had a poor appetite and was continuously bedridden. An exploratory laparotomy revealed numerous nodules all over the peritoneum. Eight days after the operation the abdomen was again filled with fluid. Three more punctures were made at monthly intervals. After the last, the fluid did not return, and the temperature remained normal. Six months later the appetite returned, the bowel movements became normal and the patient

was up and about. Thus, a case of tuberculous peritonitis with ascites, where the prognosis had been very grave, was apparently cured by persevering treatment.—*Geheilter Fall von Peritonealtuberkulose, Jentsch, Zentralbl. f. inn. Med., January 22, 1921, xlii, 50.*

Tuberculous Bone and Joint Disease.—Sorrel is chief surgeon of the seashore hospital at Berck, and in his experience the combined heliotherapy and seashore environment form the most energetic treatment at our disposal for tuberculosis of bones and glands. He does not place much value on drugs, and relates that autoinoculation with fluid from the diseased joint has been abandoned for various reasons. Serotherapy has given inconstant results, and has to be kept up a long time to be effectual. These and tuberculin are still on trial, as are also high frequency currents, but roentgen ray treatment of tuberculous glands has already given fine success in certain cases. With bone disease, although general treatment is of first importance, local measures must not be forgotten. They vary, however, with the age; in children the minimum of intervention should be the rule; in adults, resection. After the age of fifty, a cure cannot be counted on, and amputation is generally called for. We thus have quite an array of measures at our disposal but we cannot claim to shorten very much the duration of a tuberculous lesion. It runs an almost cyclic course. We cannot cure it in six months or a year, but at least we can guide it, reducing the destruction, and providing for healing with minimum of loss of function. In the differential diagnosis, the effusion may show the presence of lipolytic ferments and predominance of lymphocytes. Cultivation of the pus is generally regarded as giving unreliable findings.—*Quelques généralités sur le diagnostic et le traitement des tuberculoses osteo-articulaires, E. Sorrel, Presse méd., February 5, 1921, xxix, 101.*

Tuberculous Disease of the Hip Joint.—Next to tuberculous disease of the spine in children tuberculous coxitis takes second place as the most common and most important affection of the joints. In one series of 1000 cases reported by Whitman, over 88 per cent were in children under ten years of age. The disease runs such a slow course that many of the classical symptoms are not evident until long after the tuberculous focus has become deeply fixed in the hip joint area. There is perhaps not a disease more easily recognized and yet it is very frequently treated for rheumatism. Possibly the child had been complaining for some time of pain in the region of the knee, or there may have been a limp and stiffness of the leg, particularly in the morning. The child very likely had been sleeping restlessly, crying out at night as if in pain; or tires easily and stops frequently in its play to rest; and in the resting attitude the affected limb is favored. In the early stages the well foot of the normal side would be placed below the other foot, in order to fix the leg, and prevent motion of the hip. Later the well foot would be placed so as to secure extension of the leg that hurt. The leg of the affected side would be found to be in abduction with flexion at the thigh, the position of protection. Attempts to flex the thigh on the abdomen would be resisted. These motions could be done under a few whiffs of chloroform, for then the muscle spasm would be relaxed, the pain relieved and the irritation stopped. The X-ray is an indispensable ally. The most usual sites of erosion are seen at the point of impact between the upper margin at the head of the femur and the corresponding portion of the acetabular rim. Relief can be given these patients by application of a well fitting cast if seen early. The process of treatment from cast to brace, and crutch and weight bearing, finally to both feet on the ground and walking without support occupies from one to two years' time.—*Tubercular Disease of the Hip Joint; an Appeal for Earlier Diagnosis and Treatment, J. D. Trawick, Kentucky M. J., March, 1921, xix,* 127.

Mastoiditis and Suboccipital Pott's Disease.—Portmann of Bordeaux contributed a monographic article on the above named subject in the *Revue de Chirurgie* for September-October, 1919, xxxviii, 9-10. The subject is on the border line between surgery and otorhinolaryngology. The author finds that the question of differential diagnosis between the two above named affections has been much neglected. Failure to make the correct diagnosis might in either mistake prove disastrous. Suboccipital Pott's has repeatedly been diagnosticated as mastoiditis, but the medical men who make the mistakes do not always publish them. Moure of Bordeaux has seen two cases and the present author one, which is described. The differential diagnosis applies to three separate conditions: (1) An abscess has not formed; (2) there is a cervical abscess; (3) there is a fistulous tract. If there is no abscess forming as yet, auricular symptoms point to mastoid disease and absence of such symptoms to Pott's. Stiff neck in mastoiditis is usually absent or at best very slight, while it is a marked symptom of Pott's disease. In Pott's the mastoid region

shows no deformation. Pain, both spontaneous and induced, is referred to the affected region. After abscess formation has occurred, the pain in Pott's is not conspicuous, while in mastoiditis it is pronounced and unilateral. In Pott's we have a "cold," in mastoiditis a "hot" abscess. Punctates show the characters of the two types. If not seen until the fistulous stage the fistula presents the characters of tuberculosis in the Pott's patient and that of a phlegmon in the other. Both the radiograph and the probe should be decisive.—*Editorial, Med. Rec., March 12, 1921, xcix, 443.*

Primary Tuberculosis of the Testicle.—Tuberculosis of the body of the testicle as a primary focus in the human economy is extremely rare. It occurred experimentally in 2 rabbits out of 28 receiving an injection of tubercle bacilli directly into the aorta. Critical review of all available literature does not reveal a substantiated clinical case. The case reported here bears out this contention. The patient, age thirty-one, married four years, had gonorrhea fourteen years previously, complicated by acute left epididymitis, but recovered completely after seven weeks. Eight years ago the patient was kicked in the right testicle during a football game. No swelling or after effects were noted. In February, 1920, the patient noticed a slow enlargement of the left testicle which became tender about March 25. The author saw the patient for the first time on April 3, and found slight hydrocele with marked involvement of the body of the testicle and with a small nodule on the body proper, without evidence of any involvement of epididymis or vas. The patient was well nourished and physical examination as well as urine, blood and chest X-ray examination were negative. Orchidectomy was performed. The laboratory reported diffuse tuberculosis of the testicle with no involvement of the epididymis. A second report stated the same. Serial sections of the epididymis were then insisted upon and revealed a small single tubercle about 4 mm. in diameter. The author has come to the conclusion that in the vast majority of cases primary tuberculous involvement of the genital tract is an ascending process.—*Primary Tuberculosis of the Body of the Testicle, E. G. Mark, J. Urol., February, 1921, v,* 171.

Association of Tuberculous Meningitis with Meningococci and Parameningococci.—Tuberculous meningitis can develop in association with other infections. The association of the Koch bacillus with meningococci is frequent, according to certain authors, but a certain number of reported cases require confirmation. An exact diagnosis can be arrived at only by examination of the cerebrospinal fluid. Such diagnosis is practicable in the living subject, and should be employed in all cases. The meningococcus infection antedates the other. The prognosis is fatal.—*Association de la méningite tuberculeuse et méningo- ou paraméningococcique, Barthas, Thèse de Toulouse, July, 1920, 95, from Arch. de Méd. des Enfants, February, 1921, xxiv, 132.*

Tuberculosis of Goats.—On the basis of the assumption that the goat is rarely tuberculous, the substitution of goat's milk for cow's milk has been extensively made as a prophylactic measure against human tuberculosis. The fact is that tuberculosis in goats is not nearly so rare as has been thought, and the false security felt by those using goat's milk because of the belief that there is no possibility of the transmission of the disease is a dangerous thing. It is admitted that tuberculosis is far less prevalent among goats than among cattle. Nevertheless its occurrence must be recognized and a warning should be sounded, and physicians who have recommended the use of goat's milk as wholly free from tuberculous infection should bear in mind the possibility of the transmission of the disease through this agent. A review of the foreign literature shows that in inspected abattoirs recognition of the disease is not uncommon.—*Tuberculosis of Goats, C. Murray, S. H. McNutt and P. Purwin, J. Am. Vet. M. Ass., April, 1921, lix, 82.*

Tuberculosis in Milk Goats.—An imported herd of Saanen and Toggenburg goats which arrived from Switzerland March 3, 1920, was recently found badly infected with tuberculosis on a farm in the vicinity of Leeds, Iowa. The trip to the quarantine station at Athenia, N. J., consumed about five months. After a quarantine of about eighty-five days the animals arrived at their destination at Leeds, the trip being made by express. As two goats which were in a diseased condition failed to respond to treatment by the local veterinarian, they were shipped to the Experiment Station at Ames, Iowa. Dr. Murray reported the finding of tuberculous lesions in one of the goats on postmortem examination. On November 30, 1920, the writer applied the intracutaneous tuberculin test to the herd, which included 33 imported does, 8 imported bucks and 1 native doe. Seventy-two hours later observations revealed 6 well marked positive reactors. On Decem-

ber 6, an ophthalmic disc was instilled into the left eye of each goat. At 8 P.M., December 8, all goats with the exception of bucks and the native doe were given subcutaneous injections of tuberculin. On December 9, at 8 P.M., a second ophthalmic disc was instilled into the left eye of each goat. Observations were made three hours later and continued hourly until 3 P.M. the next day. One goat has died in the meantime. All six goats which had previously reacted to the intracutaneous test gave a positive reaction to the ophthalmic test. Three of the 6 reactors to the ophthalmic and intracutaneous tests gave a positive reaction (thermal) to the subcutaneous test. Two showed a decided rise of temperature. One died seven hours after the injection, with subnormal temperature, and revealed at autopsy extensive caseocalcareous lesions in the bronchial and mediastinal lymph nodes and in the lungs. Smears from the lesion showed acidfast bacilli and inoculations into guinea pigs produced tuberculosis. On December 24, autopsies were made on 4 reactor goats, and well marked tuberculous lesions were found. The original source of this infection has not been ascertained. The safest method to prevent the spread of tuberculosis to the human family from this source would be either to pasteurize the milk or to test the goats with tuberculin and remove reactors. Goats may be badly affected with tuberculosis and still appear in good physical condition, as was the case in this herd.—*Tuberculosis in Milk Goats, G. E. Golden, J. Am. Vet. Med. Ass., April, 1921. lix, 79.*

Tuberculosis Eradication Among Cattle in Pennsylvania.—There are approximately 1,000,000 dairy and breeding cattle on 202,298 farms in Pennsylvania. On 85,000 of these farms there are approximately 100,000 tuberculous animals. As the result of the first herd test 9 per cent of all the cattle tested were condemned. The problem is a large one. It is gratifying to know that the disease can not only be controlled, but actually eradicated from infected herds, in a comparatively short time, and once freed they will remain so. By testing and retesting free and infected herds, a very good idea as to the value of the subcutanous test was obtained. In retesting free herds the subcutaneous test had an efficiency of 98 per cent. One of two things, or both, happened to account for the 2 per cent inefficiency. The animals which reacted on the second test, after having successfully passed the first test, either became infected between the two tests or they escaped the first test. If we can obtain as good results with the intracutaneous as we are now obtaining with the subcutaneous test then the former will be adopted as a single official test. Infected herds can be freed from tuberculosis by two tuberculin tests with few exceptions: (1) by careful application and interpretation of the tuberculin tests, (2) by prompt removal of the infected animals, (3) by a thorough cleaning and disinfecting of the premises, (4) by immediate improvement of sanitation, if faulty, and (5) by not feeding calves on milk from doubtful sources, unless properly pasteurized. Accredited herds will continue to remain accredited, if owners will comply with the following: (1) by correcting sanitation, if faulty, (2) by cleaning and disinfecting stables, etc., at least once a year, (3) by guarding the herd against exposure from a neighbor's herd, providing the health of the latter has not been determined; (4) by feeding calves pasteurized milk, unless the milk is from tested animals, (5) by using extreme care in adding new animals and (6) by keeping cattle separate and apart from cattle of herds not under supervision, if shown on exhibition.—*Progress of Tuberculosis Eradication in Pennsylvania, S. E. Bruner, J. Am. Vet. Med. Ass., April, 1921, lix, 32.*

Complement Fixation in Bovine Tuberculosis.—The antigen of Besredka fixes alexin in the presence of serum of tuberculous cattle. In the sera of 304 known tuberculous cases, 84.5 per cent positive reactions were recorded. Of 90 sera where tuberculosis was not demonstrable at necropsy, 2.2 per cent reacted positively. Where tuberculosis was not advanced (glandular only) the percentage of positive reactions was 60 per cent. Where the involvement included lungs, pleura, peritoneum and some of the abdominal viscera, the reaction was 85 to 95 per cent positive, and when the disease was generalized all sera reacted positively. The method should be an important diagnostic aid in bovine tuberculosis.—*Le diagnostic de la tuberculose chez les bovidés au moyen de l'antigène de Besredka, C. Hruska and W. Pfenninger, Ann. de l'Inst. Pasteur, January, 1921, xxxv, 96.*

Excretion of Tubercle Bacilli in Bile.—Marchisotti found the liver often affected in tuberculous cattle. Healthy milk can thus become readily contaminated by droppings from tuberculous cattle, or the apparently healthy cow herself may be voiding tubercle bacilli in bile by way of the stools. His research was done on cattle slaughtered

for the market and thus supposedly healthy, the tuberculous lesions being a necropsy surprise. Human urine and stools are liable to transmit the tubercle bacilli as readily as sputum. Tuberculosis of the liver should be classed as open tuberculosis on this account. Tuberculin tests do not reveal the involvement of the liver in particular.—*Excreción de bacillo de Koch por la bilis, A. C. Marchisotti, Semana Méd., January 13, 1921, xxviii, 37.*

Tuberculosis in Small Rodents.—The experiments reported confirm the statements of previous authors, such as A. Koch, Rabinowitsch, De Jong, Weber, Bofinger, Straus, Romer, and A. S. and F. Griffith, that white rats and mice are susceptible to infection with tubercle bacilli, human, bovine and avian types, but are so resistant to small doses that they cannot replace the guinea pig or rabbit in experimental work. Intraperitoneal inoculation of 1 to 2 mgm. offers the surest means of producing infection, which is manifested chiefly by the formation of tubercles in the lungs, and by the intense multiplication of bacilli in the liver and spleen. Intracutaneous inoculation in the ball of the foot occasionally provokes extensive, severe lesions. Infection is favored in general by the introduction of repeated small doses. Only rarely is tuberculous infection fatal to rats and mice. The three types are of about equal virulence. Inoculation of the bacillus of Arloing and bacilli of the piscine types does not cause infection. Infected animals are not very susceptible to tuberculin. The phenomenon of Koch is not observed.—*Contribution a l'étude de l'infection tuberculeuse chez les petits rongeurs, A. Boquet and L. Nègre, Ann. de l'inst. Pasteur, February, 1921, xxxv, 142.*

Pulmonary Botryomycosis.—Botryomycosis is best known to veterinarians as pedunculated fibrous granuloma of horses. The growth usually arises in connection with skin surfaces. In the first case described by Bollinger in 1870 the lung of a horse was the seat of the disease. Although human cases have been reported from France, Italy and Switzerland, it has been observed most commonly in northern Africa and in Morocco. The gross lesions consist of abundant chronic granulation tissue which on microscopic examination reveals granules made up of coccus like organisms embedded in and surrounded by a hyaline matrix. Two views are held in regard to the organism, many regarding it as the usual staphylococcus aureus, others as a specific coccus. Special interest attaches to the case here reported because of its occurrence in the same community from which a previous one with localization in an internal organ was reported. A male infant, four months of age, was admitted to the St. Louis Children's Hospital, September 15, 1920. Nothing in the family history indicated the source of the infection. The baby had always had a hacking cough which had been much worse during the past six weeks. About three weeks before it had a high fever which continued for one week. Clinical examination revealed a temperature of 99.2° F., respirations 50, impaired percussion note over the entire right side, suppressed sibreath sounds and fine crackling râles, and leucocytosis of 20,000 with 62 per cent eosinophiles. The Pirquet test was repeatedly negative. The child continued to grow worse and died October 8. At autopsy there were found centimetre areas of a dark bluish color, most of which were in the posterior portions of the right lung. Histological examination of these areas revealed the presence of giant cells of the type seen in tubercles and of peculiar dark masses which consisted of Gram positive coccoid organisms embedded in a hyaline, eosin-staining matrix. The other organs showed nothing of importance. Cultures on blood agar plates made from the bronchial exudate gave a heavy growth of Gram positive cocci which presented the usual appearance of staphyloocccus albus. With the pulmonary symptoms predominant at the beginning of the disease and persisting for several weeks in such a manner as to suggest pulmonary tuberculosis, one is led to think that this case was a primary bronchopneumonia which terminated fatally.—*Pulmonary Botryomycosis, F. A. McJunkin, Arch. Int. Med., April, 1921, xxvii, 457.*

Prognosis and Antecedent Tuberculosis of Ancestors or Patients Themselves.—Whether a tuberculous ancestry renders a patient more likely to develop a slow chronic form of the disease than would another without such heredity, or whether such a tuberculous ancestry is unfavorable, is still a debated question among clinicians and authors. The influence of a mild childhood infection, as scrofula, tuberculous glands, etc., on the course of a tuberculosis developing in later life must also be studied. The present article reviews some statistics compiled from observations on German and Austrian soldiers who took part in the war, and in whom pulmonary tuberculosis frequently assumed a severe form and rapid course. The author sums up the evidence by saying that the prognosis in pulmonary tuberculosis is, in general, more severe if the patients are

individuals stricken down when in perfect health without having been previously, in their childhood, exposed to more or less repeated infections. Ordinarily, it will be less grave in individuals of tuberculous parentage as these have for the most part received such infections and carry the scars of them. It will be most favorable in those who have already had slight manifest tuberculosis.—*Le prognostic général de la tuberculose pulmonaire et les antécédents tuberculeux des ascendants ou des malades eux-mêmes, E. Arnould, Presse méd., January 19, 1921, xxix, 54.*

Tuberculosis and Experimental Endothelial Leucocytosis.—A reaction in the peripheral blood of the guinea pig, similar to the one seen during the last two or three weeks of the usual guinea pig tuberculosis, may be produced by injections of large quantities of killed cultures of smegma, timothy-hay or nonvirulent tubercle bacilli. Although the amounts necessary to produce the reaction approach the lethal dose and the animals in which the leucocytosis is maintained suffer a loss of weight, those injected with smegma or timothy-hay bacillus suspensions succumb no more readily to infection with virulent tubercle bacilli than do the control animals. Grossly and microscopically the lesions in the animals receiving injections of B. phlei and B. smegmatis differ from those of the controls living the same number of days, in that the spleen is small and that the necrosis in the leucocytic foci in the spleen and other organs is slight or absent. Smears from the omentum and other organs of the treated animals show numerous tubercle bacilli and there is every evidence of their being extensively infected. There is little reason to think that the guinea pig offers any resistance to the growth of tubercle bacilli during the first ten days or two weeks of the infection before the tuberculin test becomes positive, so that any beneficial effect from stimulation of the leucocyte which reacts to the greatest degree in tuberculosis would have to be initiated after this time. Injections of suspensions of smegma and timothy bacilli unquestionably influence the gross and microscopic character of the lesions, provided doses large enough to maintain the endothelial leucocytosis are given. Injections of nonvirulent cultures of the tubercle bacillus appear to shorten somewhat the duration of the disease.—*Tuberculosis in Guinea Pigs with an Experimentally Produced Endothelial Leukocytosis, F. A. McJunkin, J. Med. Research, November, 1920–January, 1921, xlii, 201.*

Resistance to Tuberculosis.—The authors believe that carbon dioxide may play a significant rôle in the resistance to tuberculosis. Three per cent carbon dioxide inhibits the growth of tubercle bacilli in the test tube, and 15 per cent is tuberculocidal. Cultures of tubercle bacilli buried in the tissues of animals and permitted to acquire the carbon dioxide concentration of the body are definitely inhibited in their growth, while other cultures, similarly buried, except that ingress of atmospheric air is permitted, show no inhibition. This reopens the consideration of the influence of fatigue, exhaustion, exposure, metabolic diseases, etc., as probably etiologic factors in the causation of tuberculosis in view of their ability to alter the carbon dioxide content of the body.—*Resistance to Tuberculosis: A Nonimmunologic Chemical Factor Worthy of Consideration, H. J. Corper, H. Gauss and O. B. Rensch, J. Am. M. Ass., April 30, 1921, lxxvi, 1216.*

Psychology of the Tuberculous.—Several well known phthisiologists have taught that the tuberculous subject tends to be self-centered and indifferent to the comfort and welfare of others, while Dr. Knopf of New York has expressed his disbelief in this teaching, perhaps regarding the consumptive as as much of an altruist as a patient with any other chronic incurable disease. In a paper on the psychology of the chronic invalid Ichok (*Journal de médicine de Paris* for January 10, 1921, xl, 1) touches incidentally on the psyche of the consumptive. He quotes a page from Daremberg, a famous phthisiologist, on the latter subject, but thinks it would apply with equal force to the sufferer from any other chronic malady. Daremberg attributes strong egoism to the consumptive and narrates a number of its expressions, one being that the victim of this disease cheerfully allows his friends and relatives to wear themselves out in his service and is utterly indifferent to the possibility of communicating his disease to others. Laignel-Lavastine, the well known alienist, speaks of this egoism as negative rather than positive. Realizing his weakness and helplessness, the consumptive accepts attentions as might for the same reason a child. But he does not exhibit an active, aggressive egoism. Ichok barely mentions the characteristic optimism of the consumptive: for if the latter believes that he is getting better—as he is very apt to do—such belief must react on the psyche, and hence perhaps the subject of the *spes phthisica* merely feels that he can make up the sacrifices of his

relatives after his recovery. Many adolescents impose on their parents and companions from the same motive—they expect to prosper amazingly in life and then it will be a mere bagatelle to repay favors. The author mentions the surprising sexual potency of many consumptives—amounting at times to an erotomania—and believes that the phenomenon may be in part responsible for the optimistic tendency, since a man who is sexually strong cannot well visualize himself as doomed to death,—*Editorial, Med. Rec., March 26, xcix, 529.*

Value of Artificial Pneumothorax Treatment.—Artificial pneumothorax is limited to patients with unilateral lesions, or to those in whom the tuberculous process on the other side is quiescent. This restricts its usefulness, for hardly more than 3 per cent of all tuberculous patients fall within this category. The great frequency of adhesions forms one of the greatest hindrances to successful treatment. Physical signs and fluoroscopy will not always give assurance whether or not collapse of the lung is possible. In many cases all efforts to enter the pleural cavity are unavailing, although no difficulty is expected. On the other hand, one is often successful on occasions when least expected. Repeated attempts are often necessary before gas can be admitted to the pleural cavity. From an experience during the last six years at the Montefiore Hospital the author confesses frankly that a positive cure is only rarely accomplished. In the majority of successful treatments there is distinct temporary relief, the ravages of the disease are checked for a while, the temperature drops, the cough lessens, and the patient gains weight and is a good deal happier and more comfortable. After a varying interval of improvement there arises some disastrous complications which put a stop to further progress, and the disease pursues its former course. Again, the treatment may induce a longer arrest of the activity of the tuberculous process and give the subject a year or two of comparative comfort. These gains, small as they may seem when compared to the ideal of saving life, are not to be scorned; and where we succeed in attaining them we may justly consider the treatment a valuable therapeutic agent. By keeping in mind the great frequency of complications we must never employ this mode of therapy in early cases, for in them complications are no less common.—*The Value of Pneumothorax Treatment of Pulmonary Tuberculosis, E. P. Boas, N. York M. J., April 6, 1921, cxiii, 517.*

Artificial Pneumothorax in Pulmonary Tuberculosis.—Out of 80 patients on whom artificial pneumothorax was used, Crocket had successful results in 12, partially successful results in 30 and 38 failures. The causes of the limited success he classifies as follows: (1) Adhesions preventing complete collapse, in 9 cases. (2) Extensive disease in both lungs, leading to increased cyanosis and dyspnea, 5 cases. (3) Bronchitis affecting the good lung and recurring from time to time when weather conditions were unfavorable, in 4 cases. (4) Onset of influenza causing extension of the disease in the good lung, in 3 cases. (5) Stopping the injections at too early a period, and reinductions being impossible on account of adhesions, in 2 cases. (6) Patient refusing further injections, having had a fright by the onset of surgical emphysema, one case. Crocket is a firm believer in this method of treatment in suitable cases.—*Artificial Pneumothorax in Pulmonary Tuberculosis, Crocket, Edinb. M. J., August, 1920, xxv, 113.*

Cerium Salts in the Treatment of Chronic Tuberculosis.—Cerium salts modify the cultural characteristics of the tubercle bacillus in vitro and produce a mononuclear leucocytosis in the rabbit and guinea pig. When used for treatment they have a general and a local action. Whenever possible it is best to apply the drug directly to the ulcerations of the skin or inject it into a cavity. But general treatment gives the better results. Intravenously a 2 per cent solution of didymium sulphate is used in doses of 0.08 to 0.1 gm. daily; subcutaneously or intramuscularly, 2 cc. of a 2 per mille lipoid solution are given daily. Renon administers the drugs in addition by mouth, by rectal instillation and by intratracheal injection. Unless the therapy is maintained for a sufficiently long period and given at suitable intervals it is useless. Twenty injections are given daily or on alternate days followed by a rest period of twenty days. In general the treatment is applicable and indicated in chronic tuberculosis and contraindicated in acute or febrile cases. It has been used to advantage in tuberculosis of the lungs, lymph nodes, skin, pharynx and larynx, bones and joints, peritoneum, testicles, epididymis and kidneys. During the first few days of the treatment there is a slight exacerbation of such symptoms as cough, expectoration, suppuration, etc. This is followed by a rapid return to the initial condition; then slowly, step by step, the moisture subsides, suppuration is diminished, the sputum be-

comes less, the lesions become dry, and finally cicatrization results. Improvement is always slow and progressive, never abrupt and sudden. Frequently the bacilli disappear from the sputum after two or three series of injections. These patients may stop coughing, and have only a trifling expectoration. They can work without fatigue and without elevation of temperature and their physical symptoms subside. Even in the more advanced cases improvement is such that the patients frequently can return to their work. Rapid cures have been observed in lupus erythematosus and rapid improvement in adenitis. Tuberculosis verrucosa subsides. Lupus is often more resistant but several cures have been obtained. —*Technique, indications et résultats du traitement des tuberculoses chroniques par les sulfates de terres cériques, H. Grenet and H. Drouin, Presse méd., February 23, 1921, xxix,* 153.

Calcium in Pulmonary Tuberculosis. —Prest has been giving calcium lactate to a majority of the 94 patients in the Ayrshire Sanatorium and is convinced of the benefit it produces. In many girls and young women and in some women at the menopause, who are also tuberculous, one of the distressing symptoms is menorrhagia. This condition can almost invariably be benefited by the administration of calcium. Calcium largely ceases to be excreted during pregnancy, the retained calcium being used up by the growing foetus. During lactation calcium is largely secreted in the milk. This is probably the chief reason why lactation has such an injurious effect on tuberculous women. The effects observed during the administration of calcium are fall in temperature, cessation of night sweats, increase of energy, cessation of menorrhagia, retrogressive changes in the lesion and improvement of coexisting anemia. The drug was usually given as a powder of 15 grains of the lactate every night during alternate weeks. —*Calcium in the Treatment of Pulmonary Tuberculosis, E. E. Prest, Brit. M. J., March 19, 1921, no. 3142, 420.*

Calcium and Tuberculosis in Rabbits. —Massini injected young rabbits with calcium chloride after they had been inoculated with tuberculosis, and found that they lived a little longer than the controls.— *Calcium und Tuberkulose beim Kaninchen, R. Massini, Schweiz. med. Wchnschr., March 10, 1921, li, 233.*

X-ray Treatment of Tuberculous Laryngitis.—Few reports have been made on the X-ray treatment of tuberculosis of the larynx but a few isolated instances have been encouraging. Seven cases are reported here and 10 others have been treated. The exposures are made every eight to ten days, alternating from the front to either side, using 16 to 20 X, according to Kienböck, through the skin to the larynx. The induction apparatus of Siemens and Halske, and Müller's tubes are used with a current of three and a half milliamperes and a three mm. aluminum filter. The period of exposure and the intervals vary with the reactions. Daily spraying of the larynx with menthol is also employed. No harm was ever noted. The infiltrative cases seem to give best results. Ulcerations do not respond so well. Local reactions, such as swelling, with increased cough and expectoration and a feeling of dryness, were regularly noted. They usually lasted only one day. An objection is that the treatment must be carried out over a rather prolonged period of time. The routine rest treatment is continued.—*Zur Röntgenbestrahlung der Kehlkopftuberkulose, J. Fleck, Beitr. z. Klin. d. Tuberk., November, 1920, xlv, 268.*

Heliotherapy in the Alps.—Different parts of the continent show variations in the quantity and quality of light which reach the earth's surface. This may affect the cure in different locations. Nevertheless sunlight treatment can be carried out anywhere where sufficient sun is available. The rays stimulate and are beneficial to tissue cells. They are however very toxic for bacteria, especially tubercle bacilli. Sunlight stimulated the proliferation of cells that had not been destroyed, whereas for cells damaged beyond repair the rate of disintegration was increased. Conditions of defective metabolism, anemia and rickets are well suited for sunlight treatment. Sluggishly healing superficial wounds such as varicose ulcers also promptly respond to the stimulation.—*Heliotherapy in the High Alps, A. Rollier, Lancet, March 19, 1921, 582.*

Effect of Ultraviolet Radiation on Vitamines.—Eight hours of continuous application of ultraviolet radiation to fat-soluble vitamines destroyed them, whereas there was no effect upon the water-soluble ones. Since the former are considered to be important factors for growth, and inasmuch as the mercury quartz light has been employed for sterilization of milk, the evidence points against such use of these radiations.— *Action des rayons ultraviolets sur les vitamines, S. Zilva, La Nature, May 15, 1920, no. 2405.*

Action of the Visible Light Rays on the Body Temperature.—Exposure to infrared rays elevates the temperature at the surface to 3.2°C. over that of the depths. With the visible rays the reverse occurs, that at the depths being higher than that at the surface by 1.6°C. Further exposures of guinea pigs made at the Finsen Institute verified the above findings; but here the temperature of the body, under the action of the visible rays, was three degrees higher than that at the surface. With the ultra-red rays blisters easily developed on the backs of the guinea pigs (that had been shaved) after thirty minutes' exposure. Visible rays never cause this.—*Action of Visible Rays on Temperature, C. Sonne, Hospitalstidende, January 5, 1921, lxiv,* i.

Institutions for Sun Treatment.—A perfect heliotherapeutic institution with excellent results may be obtained with easily improvised arrangements. Certain conditions should be fulfilled regarding climate, situation and management. The place should admit as much sunlight as possible and the air should be bracing. In mountainous countries, such as Switzerland, a high altitude fulfills these requirements. The ideal height is 3000 to 5000 feet. Leysin is 4400 feet high, sheltered from the north wind and enjoys the sun for a large number of hours during each day. Three principal types of building are described. The first of these is a mountain chalet converted into a sanatorium. On the south side wide balconies were constructed on to which the patients' beds could be wheeled. The children's house and its annex were provided with large balconies placed on the front of the house in such a way as to be exposed to the sun's rays during almost the whole day. The second type, a mountain hotel converted into a sanatorium, was originally a tourist hotel built in a magnificent situation 5000 feet above sea level. The third type is a sanatorium constructed and arranged entirely with a view to the practice of heliotherapy. This building consist of a central block and two large wings. The central block contains on the ground floor the consulting room, roentgen departments, rooms for orthopedic and phototherapy, bacteriological laboratory and offices. On the first floor are dining room, billiard and smoking rooms and kitchens, and on the fourth floor a surgical dressing room and operating theatre for nontuberculous infections. The balconies of the left wing are used for the sun cure. The first floor balconies of the right wing are reserved for children. A solarium on the roof is ideal for the suncure, as a playground, and for patients who are making their first attempts at walking. It is important that the balconies are exactly on a level with the dormitories so that the patients may be wheeled everywhere in their beds without jolting. The beds must be high and should be fitted with large and solid wheels, and the mattresses should be hard, so that there is no danger of the patients assuming a bad posture. In certain cases special apparatus is used for immobilizing patients, especially children with spinal caries or hip disease. These devices are very simple, and they can be opened and closed at will and cannot interfere with the suncure. The suncure is the most perfect fulfilment of the demands of orthopedic and conservative surgery, since it sends back to their work individuals with limbs and articulations intact in almost every case. Tuberculous foci which have opened spontaneously or which have been incised are much slower and more troublesome in healing than closed lesions. Gradual increase in the duration of the sun baths must be made to suit individual cases. The amount of exposure must be reduced or temporarily interrupted on the least sign of intolerance, as rise of temperature or pulse, general malaise, erythema, etc. Exposures should last only a few minutes at the start; as soon as the skin is pigmented two or three hours a day may be undergone without danger. The head and nape of the neck should always be protected by a white cotton hat. This method has never resulted in accidents at Leysin. Afebrile cases of pulmonary tuberculosis are greatly benefited by the treatment. Chest and back can be exposed only after the patient has been accustomed to exposure of the legs, the thighs and the abdomen. Among the accessories of heliotherapy the work cure has yielded the most remarkable results. When strictly supervised it constitutes a therapeutic factor of prime importance. Heliotherapy has an important part in preventive medicine. With this object in view an open air school was started near Leysin for predisposed children and to form a half-way house to prepare convalescents for their return to life on the plains. These schools should be established universally in towns and villages. —*The Construction of an Institution for the Heliotherapeutic Treatment of Surgical Tuberculosis, A. Rollier, Tubercle, March, 1921, ii, 241.*

Treatment of Pulmonary Tuberculosis with Partial Antigens. —In order to test properly and with any degree of thoroughness a remedy for which its discoverers, on the basis of long and extended experience, have set up pronounced therapeutic claims,

four requirements must be complied with: The examiner must be familiar with the method of using the remedy, and test it long enough. Ott used the partial antigens from February, 1914, until into 1917, not only in ambulant treatment but also in hospitals. The number of patients must be sufficiently large to elminate as far as possible the element of chance, which plays a part in all disease. Ott can report on at least 489 cases of pulmonary tuberculosis. Finally, the remedy must be tested impartially and with interest, otherwise it is easy to bring any remedy into discredit by selecting hopeless cases. For purposes of comparison, he gives the result in 420 practically corresponding cases formerly treated by him with old tuberculin. The results are essentially the same as with the partial antigens. Ott concludes that the Deycke-Much partial antigens are by no means entirely innocuous. In their therapeutic effects they are not in the least superior to tuberculin. The theoretic premises of the treatment rest on a very uncertain basis.—*Sechsjäherige Erfahrungen in der Behandlung der Lungentuberkulose mit den Partialantigenen nach Deycke-Much, A. Ott, Münch. med. Wchnschr., October 1, 1920, lxvii, 1139.*

The Friedmann Treatment.—The chief characteristic of the method is the inoculation of living acid-fast bacilli, isolated from a turtle. They are differentiated from human tubercle bacilli (1) by growing at a temperature between 13° and 42°C., (2) by producing miliary tuberculosis in cold-blooded animals, and (3) by being harmless for warmblooded animals. Friedmann would classify them as a separate species, intermediate between the human and reptilian bacilli. Pierkowski and others dispute this claim, saying that they are human bacilli, accidentally infecting the turtle and becoming transformed gradually in its new host. Calmette states that Friedmann's cultures contain human as well as turtle bacilli. Friedmann maintains that his bacillus, while innocuous for man, will immunize against human and bovine infection, and supports his claim by animal experiment, but in 1912 he was more conservative than in 1904. Orth and Ehrlich could not confirm Friedmann's claims. Selter in a recent work was unable to prove the existence of antibodies following inoculation with the Friedmann organism and could not alter the course of disease in guinea pigs infected with human organisms by treatment with turtle bacilli. Friedmann has inoculated infants and caused positive skin reactions which later disappeared, but Selter in duplicating this work obtained negative results. Clinically, the method has been tried in surgical cases with contradictory results and no definite conclusions can be drawn at present. With pulmonary tuberculosis the results are also inconclusive and accidents have been reported from the use of this method. Some successes have been obtained, whether due to the method or not is a question, and most results are negative or doubtful and cases as comparable as possible have given different results. The writer concludes that Friedmann's case is far from being proved and time alone will decide. All new methods have produced transitory successes.—*À propos du traitement de la tuberculose par la méthode de Friedmann, M. Nathan, Presse méd., November 13, 1920, xxviii, 819.*

Treatment of Surgical Tuberculosis.—Among 4600 cases, there were 350 cases of joint tuberculosis, about 7 per cent. Of these cases 253 were treated: 28 operatively and 225 conservatively. The first thing that deserves warmest advocacy is the securing of all facilities necessary to carry out general treatment, especially that of heliotherapy and outdoor life. Barring a few patients in especially favorable circumstances this should mean institutional treatment for the majority of cases. Severe cases of either Pott's or hip or shoulder disease will do better in recumbency than in ambulatory treatment and the general trend should be more toward prolongation of recumbency. While the division of indications into conservative and operative treatment largely parallels the division into adult and juvenile tuberculosis, there are operative indications for radical interference in children, which, if undertaken at all, should be done at an early time. The best results are obtained by a long period of institutional care so that both recumbent and general hygienic treatment may be administered thoroughly and systematically.—*Operative and Nonoperative Indications in Surgical Tuberculosis, A. Steindler, Iowa State Med. Soc. J., February 15, 1921, xl, 33.*

Climate in Tuberculosis.—The superiority of one locality over another as a place for the treatment of tuberculosis is individual rather than general and the fact that some patients do better in a particular climate or locality is no criterion that a majority of the tuberculous will do equally well there. There is no specific climate for the treatment of tuberculosis. Although many patients are greatly improved by a change of climate, the improvement can be attributed to the effect of change rather than

to the virtues of the particular climate. Proper care, which means proper rest, good food and open air, and competent medical supervision, is of much greater importance than climate. Competent medical supervision includes proper medical and surgical treatment for symptoms and complications. Heliotherapy or artificial light therapy may be added to these four well known and thoroughly proved essentials. No acutely ill patients should be sent a long distance. No patient with insufficient funds, irrespective of his physical condition, should be sent to a tuberculosis resort, unless he can enter an institution. A patient with sufficient funds should not be sent away unless he can and will place himself under proper medical supervision and follow instructions absolutely. A change is indicated in a chronic case, which has reached the point where the condition remains stationary after a sufficient length of time, providing the patient can receive equally good care somewhere else. Institutional treatment is preferable to taking the cure in a hotel or boarding house. With proper treatment the outcome in any particular case of tuberculosis depends largely upon that very indefinite individual factor, namely, allergy or resistance. Not all patients are equally resistant to the disease or can build up sufficient resistance even under proper treatment. Unfortunately we have no method of accurately estimating the individual resistance and must depend upon the subsequent progress of the patient to learn whether or not he possesses sufficient resistance to overcome the disease. This makes prognosis uncertain.—*Climate in Relation to the Treatment of Tuberculosis, E. P. Kolb, Long Island M. J., January, 1921, xv, 1.*

Necessity of Foundation of Sanatoria for Surgical Tuberculosis.—A year ago a questionnaire was circulated among the chiefs of the surgical departments of the canton, district, and children's hospitals of Switzerland. Fifty answers were received which are analyzed in this article. The first question, whether the care of surgical tuberculosis cases within the domain of the questioned was adequate, received 10 affirmative, 34 negative and 6 indefinite answers. The same impression is gained when the results of the statistics of Basle for 1913 are considered. Of 15,000 surgically tuberculous in Switzerland, a third are poor or of very moderate means and need mountain cure, whereas there are available at most only 500 places. Out of 100 cases with surgical tuberculosis, 3 were well-to-do, 28 belonged to the middle class and 69 were poor. As to the second question, in which direction these cases need be aided most, the necessity for sanatoria in high altitudes was emphasized by 44. At the present time there is no known means which improves the general condition and which makes possible so good functional results as sun treatment and high altitudes. The third question, whether and to what extent the existing sanatoria can be considered in the treatment for surgical tuberculosis, was emphatically denied by 40: only 4 were satisfied; the rest were indefinite. The question by whom the public sanatoria (*Volksheilstätten*) are to be founded, is in the main answered by the state organization of Switzerland: 25 recommended cantonal institutions, 15 recommended the combination of several cantons and 10 answered indefinitely. The last question, whether a Swiss combination of efforts in favor of the surgically tuberculous without means is desirable, was affirmed by 34 and denied by 6. The institution of several colonies would benefit all canons. Quervain recommends that a commission for the combating of surgical tuberculosis be nominated.—*Die Notwendigkeit der Gründung besonderer Heilstätten fur chirurgische Tuberkulöse in der Schweiz, de Quervain, Gegen die Tuberkulose, February 12, 1921.*

Treatment of Tuberculosis of the Kidney.—Winiwarter reports four cases of tuberculosis of the kidney in which catheterization of the ureters, to determine which kidney was affected, was impossible. He recommends in such cases *sectio alta* under anesthesia. Before opening the bladder he injects phlorizin and indigocarmin; he then catheterizes both ureters, passing the catheters out through the urethra. The tuberculous changes in the bladder are curetted and cauterized, and then the bladder and the abdominal wound are closed. In the meantime the urine from each kidney is collected and examined for albumin, blue staining and sugar. The functional tests should be completed by the time the preparations for nephrectomy have been made, so that no time is lost. The ureter catheters are then drawn out, a retention catheter is inserted in the bladder, and the tuberculous kidney is removed. *Beitrag zur Behandlung der Nierentuberkulose, J. Winiwarter, Wien Klin. Wchnschr., November 25, 1920, xxxiii, 1043.*

Treatment of Tuberculosis of the Bones and Joints.—Sorrel formularized his treatment of tuberculosis of the bones and joints as follows: "Immobilize in the young, resect in the adult, amputate in the aged." Lenormant does not like exacting

formulas in medicine, which impress themselves on the memory but which are uncompromising in their rigidity. Sorrel's attempt to codify the treatment of tuberculosis of the bones and joints appears to him to be entirely too drastic and schematic, and, if applied to the letter instead of the spirit of the dictum, will result in absurd consequences. Why reserve for the infant and absolutely refuse to the adult the benefits of immobilization? It may be correct to resect in the adult but only when it is specifically indicated. A general rule for amputation in the aged is too drastic.—*À propos du traitement des tuberculoses ostéo-articulaires, Lenormant, Presse méd., March 19, 1921, xxix,* 221.

Blood Transfusion in Pulmonary Tuberculosis.—The transfusion of blood has been resorted to by the authors in a series of cases at the Chicago Municipal Tuberculosis Sanatorium. The blood of the donor and recipient are tested for isoagglutinins and isohemolysin, Wassermann tests for syphilis, and complement fixation tests for tuberculosis. In addition the cytology of the blood of the recipient is studied weekly. The transfusion is done by the indirect method at weekly intervals. The recipients are patients in whom the prognosis is doubtful or bad, who are not improving under the usual method of treatment and are classified as moderately advanced B and C, and far advanced A and B, according to the classification of the National Tuberculosis Association. Six patients have received from 2 to 5 transfusions at weekly intervals of from 100 to 375 cc. of blood. Transfusion of over 200 cc. usually resulted in a reaction characterized by chill, fever and sweating with prompt recovery therefrom. The clinical course in this series of cases was not appreciably altered. Changes in the blood of the recipients in this series were a steady deviation to the left or no change as determined by Arneth count. In conclusion, it is evident that normal blood is devoid of that specific element which will arrest the progress of the disease. Further experimental work is now being carried on with a series of cases in which the donors show a positive complement fixation test for tuberculosis.—*Blood Transfusion in Treatment of Pulmonary Tuberculosis, E. B. Freilich, A. J. Hruby, and J. J. Mendelsohn, Illinois M. J., January, 1921, xxxix, 32.*

What the Nurse Should Know about Tuberculosis.—The nurse should be familiar with the following facts about tuberculosis: the cause and transmission of the disease, the most common early symptoms, the broad principles of treatment, and the principles of hygiene and sanitation in general. Sooner or later her work will bring her into close contact with other social problems such as housing, city cleaning, factory conditions, cost of living, milk supply and lawmaking. She should know that the consumptive is a menace to the community and that his care is as much a public duty as that of a smallpox patient. She must realize how important it is to watch contacts and that child contacts are most susceptible and form the consumptive army of later years. Above all, she should not regard her patient as a pauper case.—*What the Nurse Should Know about Tuberculosis, E. A. Gray, Pub. Health Nurse, July, 1920.*

Knights of Columbus in Tuberculosis Campaign.—A Knights of Columbus National Committee is announced with Dr. Edward W. Buckley, St. Paul, "supreme physician" at the head, for the investigation of the causes and care of tuberculosis in the United States. This committee will act in conjunction with the national and state health services and the Red Cross.—*Medical News, J. Am. M. Ass., May 28, 1921, lxxvi,* 1507.

Trauma and Tuberculosis.—Korteweg is making an official investigation of this subject and appeals to the profession to aid him in this task. Acute miliary tuberculosis, especially in the form of meningitis, is the most instructive for this purpose, and he charts the cases he has compiled in which death occurred within six weeks of the trauma. In 30 cases of tuberculous meningitis, the trauma had been an operation; in all but 3, for a tuberculous process. In 19 cases there had been a fall or blow on the head; in 5 a fall not affecting the head; a violent shock in 3, and in one case only extreme fright for half an hour. His chart shows that the trauma cannot be incriminated for a death from tuberculous meningitis or miliary tuberculosis occurring in less than fourteen days afterward. In the 14 cases of miliary tuberculosis, the trauma had been an operation in 4; fall into water in 1 case; fall from a height in 5, and abortion in 4. The connection between trauma and acute tuberculosis has long rendered surgeons extra wary in operating on the tuberculous. The chart emphasizes further that this connection is manifested also in the duration of the disease, the fifteenth day showing the beginning of the fatalities, and the number runs up high. At the twenty-seventh day it drops abruptly.—*Tijdsverband tusschen trauma en tuberculose, R. Korteweg, Nederl. Tijdschr. v. Genecsk. January 8, 1921, lxv, 164.*

Auto-urine Test for Active Tuberculosis.—The biologic tuberculin reactions heretofore in use indicate little or nothing of the stage of the disease, of its development, of the retrogression of the process or of its healing—in other words, of the activity of the disease. The propounders of the auto-urine test theory believe it possible to demonstrate the activity of a tuberculous process through the proof of antigens in the human urine by means of an allergy reaction of the skin. This theory is the product of the idea that when there is an active tuberculous process in the body there must be products of elimination and disintegration of and due to the tubercle bacilli. These products of active disintegration or antigens, or tuberculin-antituberculins, as they are described by some, are thrown into and distributed by the blood stream, where part of them are held and made harmless by the defensive mechanism of the body, the antibodies; and part are removed from the body by the secretory organs, the kidneys, the intestines, the liver, the skin, the lacteals, etc. It follows that if the existence of these antigens can be proved, then will the activity of the tuberculous process be evident; for, unless there is an active and disintegrating infective focus in the body, the formation and elimination of antigens is not comprehensible or conceivable. The method by which the existence of these antigens is demonstrated and proved is the auto-urine reaction, depending, however, on allergy or organic hypersusceptibility of the skin. The demonstration of the presence or absence of antigens is accomplished by injecting into the skin of the patient his own urine, which has undergone certain modifications. Should the skin be anergic, then his urine is injected into another known to have skin allergy, or organic hypersusceptibility to tuberculins. Briefly, the tuberculin used for the skin reaction is furnished by the patient himself in his own urine. If this reaction is positive, the assumption is that tuberculous antigens are in the urine, and that therefore an active tuberculous process exists in the body. If the urine contains no antigens, its injection affects the skin nonspecifically and exclusively, as would an injection of a solution of various urinary salts which, if not too highly concentrated, will not cause a reaction of itself. The principles of these several theories and their development as facts are supported by findings in about 300 cases reported by Wildbolz, Lans and Imhof. The results obtained by the authors in forty cases with the auto-urine reaction are tabulated. It was observed that all cases with bone involvement were allergic, and all reacted distinctly to the auto-urine test. In none of the cases were there conflicting results. In every case in which there was definite allergy to tuberculin along with signs of activity, the auto-urine reaction was positive. And all of the anergic patients with positive signs gave definite reactions when their urine was injected into allergic individuals except in one case in which the renal impairment induced the authors to use the auto-serum test, the result of which was positive. Further, the negative reactions obtained in the allergic cases have only borne out the opinion that these individuals had no active tuberculosis and were accepted as favorable rather than as disparaging results.—*The Auto-Urine Test for Active Tuberculosis, C. B. Gibson and W. E. Carroll, J. Am. M. Ass., May 21. 1921, lxxvi, 1381.*

Infection in Tuberculosis.—This is a paper addressed to nurses. It must be gratefully recorded that tuberculosis has been at last recognized by the best schools of nursing, and some theoretical instruction made available. So now a nurse need no longer circulate in the community her traditional grandmother beliefs about tuberculosis, stamped with the authority of a uniform and a diploma. A bit of misinformation hard to correct, even among nurses, is that tuberculosis takes a place with scarlet fever, diphtheria and influenza; or perhaps even with smallpox, Asiatic cholera, and the plague as a disease easily communicable and dangerous. Tuberculosis is so infectious and so widespread that, however carefully children are brought up, few in ordinary communities reach adult life uninfected. This childhood infection, almost universal, gives a latent focus of disease which may at any age be stirred into activity by adverse conditions, but gives also, to some extent at any rate, a protective vaccination against further infection. Gross tuberculous infection in infancy is usually fatal, and the death rate up to eighteen months of age is heavier than in any other age period of equal length. It is considered that some degree of vaccination against human tuberculosis is acquired by the use of milk from cattle suffering from the bovine form of the disease. There may perhaps be seen in this some silver lining to an otherwise dark cloud. Average people, like most of us, or all of us, have quite likely a partial immunity to measles and tuberculosis infection, because we have been already infected in childhood. Reinfection may occur, but usually there is little danger except when infection is gross or resistance unusually low. So much for tuberculosis as an infection. Tuberculosis, the disease, is

something quite different. From this adults are certainly not exempt. In most countries tuberculosis accounts for at least one death in four between the ages of twenty and forty. This open disease of adult years is flower and fruit of the seed planted in childhood. What then causes tuberculosis at these ages? There has been no new infection. The disease has come from within, not from without. In human soils, tuberculosis is widely seeded and rooted. Good human husbandry keeps disease under control, bad human husbandry, anything that debilitates, exhausts, breaks down, lowers resistance, makes for disease activity. If there were danger in nursing tuberculosis cases, that danger would be greater in the general hospital where tuberculosis is not expected, than in the sanatorium, where it is counted upon and every detail arranged appropriately. The freedom of sanatorium staffs from the disease is remarkable.—*Infection in Tuberculosis, D. A. Stewart, Nurses' Alumnae J., Winnipeg Gen. Hosp., 1920.*

Spontaneous Pneumothorax Complicating Artificial Pneumothorax.—Burnand of Leysin describes several cases which show the irreparable nature of an extensive opening between the pleura and lung. In 4 of his 9 cases the spontaneous pneumothorax had existed before and had developed anew in the course of the therapeutic pneumothorax. Expectoration of pus and the anomalous behavior of the manometer warned of this complication. Three of the 9 patients succumbed to the effects in the first month and 4 in from three to six months. Forlanini's 8 patients all died. The only recourse, if the pus keeps forming, is to open the pleura and drain, but this is only palliative. A favorable evolution is extremely rare.—*La perforation du poumon, complication du pneumothorax artificiel, M. R. Burnand, Ann. d. Méd., January, 1921, ix, 22.*

Immune Reactions with Artificial Pneumothorax.—Carpi found the opsonic index constantly increased in cases of pulmonary tuberculosis under treatment with artificial pneumothorax. As evidence of the immune reactions may be counted the cure of laryngeal tuberculosis during the artificial pneumothorax treatment. Even more significant is the cure of renal tuberculosis under these conditions. In one case the cure of a classic tuberculosis of the kidney was confirmed three years later. Such cases establish the stimulating action on the defensive forces and specific stimulation of the morbid foci under the influence of the changes brought about by the artificial pneumothorax.—*Réactions immunitaires dans la tuberculose pulmonaire traitée par le pneumothorax artificiel, U. Carpi, Schweiz. med. Wchnschr., March 31, 1921, li, 299.*

Roentgen Ray and Tuberculosis in Infants and Children.—As a result of a statistical study of forty-four infants and children at the Boston Consumptives' Hospital, the following points are emphasized: (1) (*a*) The Pirquet and intracutaneous skin reactions are reliable guides to infection with tubercle bacilli, and the number of positive reactions increase from infancy up through childhood, over ten years of age, all patients reacting. (*b*) In 26 of 36 positive skin reactions, the roentgen ray disclosed the site of infection to be intrathoracic. (2) D'Espine's sign as a clinical index of tuberculosis of the bronchial lymph nodes is of relatively little value, being elicited only eleven times, as against roentgen ray evidence of glandular enlargement in twenty-eight cases. (3) Three cases of positive sputum were found in fourteen diagnoses of chronic pulmonary tuberculosis. (4) Fourteen cases of chronic pulmonary tuberculosis of the adult type were found. This suggests that the so called phthisis is more common in children than has been stated by writers of textbooks. (5) Fifteen cases, negative clinically, showed definite roentgen ray signs of marked structural changes consistent with tuberculous infection. This raises the question as to whether these children are to be regarded as more likely to develop clinical tuberculosis and should thus be watched carefully and roentgenographed at fairly frequent intervals.—*Roentgen Ray and Tuberculosis in Infants and Children. A Study of Forty-Four Cases, F. W. O'Brien and F. B. Ames, J. Am. M. Ass., May 28, 1921, lxxvi, 1474.*

Tuberculosis in Children.—The author uses the following routine examination for new patients at the Children's Tuberculosis Clinic of the Michael Reese Dispensary, Chicago: Family history, previous history, weight and height, physical examination, Pirquet test, X-ray of chest. In old patients he determines the weight at every visit, the height once in three months, and makes a physical examination. The following is the routine treatment of latent tuberculosis: patients are referred to Nutrition Clinic; general instructions are given as to food and sleeping; reëxaminations are made every three months unless otherwise specified; home conditions are investigated; all other members of the family are examined. All contact cases with negative Pirquet reaction should be retained at the clinic and

examined once in three months. All cases with negative Pirquet reaction with no history of tuberculosis in the family should be referred back to the Pediatrics Department. *Summary.* (1) In a study of 300 children most of whom came in contact with tuberculous people, 141 cases reacted positively to the Pirquet test and 83 negatively; 76 cases are still pending a diangosis. (2) Of the 141 cases that reacted positively, in ninety per cent the infection was only latent. Of the 14 cases of active tuberculosis, only 3 or approximately 3 per cent of the total, had active pulmonary tuberculosis. (3) In most positive cases, the source of infection was the father, although the mother was infected in a good number of cases. (4) Ninety-eight per cent of the cases with latent tuberculosis showed no subjective symptoms. (5) Ninety per cent of the cases were under weight, most of them averaging from 4 to 8 per cent below the standard. (6) Long eyelashes and visible veins over the chest were present in the greatest number of children with latent tuberculosis. (7) Seventy-five per cent of the positive cases showed hilum dulness and whispered bronchophony to the seventh dorsal vertebra. These two signs are strongly indicative of bronchial gland tuberculosis. (8) The X-ray plates usually confirmed the hilum dulness by showing a shadow over the hilum and often also one or more calcified spots in the substance of the lungs and radiations toward the apex. Although one is not justified in making a diagnosis of tuberculous glands from the X-ray examination alone, the latter should constitute corroborative evidence of the presence of tuberculous glands. (9) The Eustace-Smith sign was very infrequent in the cases of latent tuberculosis in this series. (10) Tuberculin tests when positive should establish a diagnosis of the presence of the tuberculous infection in children. The classification of the type of infection must be made by the subjective and objective symptoms and by the X-ray findings. (11) Latent tuberculosis requires no active treatment. The patient, however, should be given the benefit of general hygienic measures. (12) All children who have come in contact with a tuberculous individual should be under observation so as to establish the diagnosis and institute treatment if necessary. If the home conditions are good, children with latent tuberculosis should be left at home. If the home conditions are poor or if there is an open case of tuberculosis in the family, the children should be sent to a sanatorium.—*A Clinical Study of Tuberculosis in Children. A. Levinson, Med. Rec., May 7, 1921, xcix, 773.*

Localized Pleural Irritation and Syncopal Accidents.—Although some surgeons seduced by the simplicity of technique and the generally remarkable tolerance of the pleura to operative manoeuvres, have perhaps lost sight of the existence of pleural reflexes, others on the contrary have exaggerated the danger. Montaz and Pierry have each recently reported deaths from syncope following an injury to the pleural cavity. Montaz's patient had been hit with a bit of exploding shell and an operation of small importance for its removal, on account of rather alarming symptoms, resulted in the death of the patient a few hours later from syncopal accidents. In Pierry's case death suddenly occurred while the patient was being radiographed for a bullet in the thorax. Pierry says that the reflex, caused by splinters of bone irritating the pleura during forced breathing for the radiograph, was the cause of death, since autopsy revealed no other cause. The susceptibility of the pleura to certain local irritations, in appearance of minimum importance,—exploratory puncture, for example—has been recognized for a long time; and the accidents to which they may give rise have been minutely described by Bouveret, Cestan, Roch and others. The clinical modalities have been studied, although they have been subdivided perhaps a little artificially, but an attempt has been made to grasp the etiology and pathogenesis in order to fix upon a rational treatment. Hypotheses are not wanting for explaining these reactions, and although some are ingenious their very number sufficiently shows the complexity of the phenomena and the difficulties encountered when their internal mechanism is to be explained. There are the toxic theory, and the theories of sudden depression, embolus, and cerebral anemia, the uremic and the reflex theories, to mention the more important. In certain remarkable experiments Cordier has shown the capital part played by reflexes in the production of these accidents, the starting point of which is the irritation of the pleural terminal filaments of the pneumogastric nerves. It would seem to be a fact that this nerve is alone concerned and not the phrenic, intercostals, or sympathetic, as many have supposed. Syncopal or convulsive phenomena, hemiplegia or paretic accidents, vasomotor disturbances, minor and major nervous accidents, observed both clinically and experimentally in lesions of the pleura, are all phenomena of the same order. They are reflexes arising in the rich nerve arborizations described by Rubashkin and Romanoff, in the deep stratum of the visceral pleura, the pneumogastric being

the centripetal route. Cordier very rightly insists on the essential part played by localized irritations of this serosa. Every pleural irritation is not the origin of a violent reflex; on the contrary, experience during the war has confirmed what was already known, namely, that the healthy pleura easily supports massive excitation affecting large areas, quite in contrast to the peritoneum. The study of the blood pressure during thoracotomies is a demonstration of this. While the pressure curve during laparotomies offers variations from a few centimetres of Hg. to complete symcope, according to the manipulations made on the peritoneum—traction on the intestine, mesentery, etc.—the sphygmomanometer appears to remain quite indifferent to surgical manipulations on the lungs and pleura. It, however, must not be forgotten that this is generally the case and that massive irritation of the pleura is not without its risks, even when the interference does not require the infliction of traumatic insults to the parts. Pleural reflexes explain certain serious accidents, paradoxical in appearance, occurring during thoracotomy or shortly after the thorax has been closed. There therefore exist in the pleura certain particularly sensitive areas whose excitation is susceptible of causing phenomena of shock. Their topography is not as yet clearly defined and all that can be said at present is that they exist.—*Editorial, Med. Rec., April 23, 1921, xcix, 703.*

Gastric Ulcer in the Tuberculous.—The authors have found signs of pulmonary tuberculosis in a surprisingly large proportion of their gastric ulcer cases, and they urge giving the tuberculous the benefit of operative treatment the same as if they were not tuberculous. Four cases are reported.—*Du traitement chirurgical de l'ulcus simplex chez les tuberculeux, G. Aigrot and R. Gaillard, Lyon Méd., March 25, 1921,* cxxx, *245.*

Tuberculous Peritonitis.—Cases of tuberculous peritonitis are very favorable for cure, at least if the abdominal condition is the main factor. The possibility of cure is due to the confinement of the morbid process in a place where it can be attacked by nature's forces. In areas that can be spared without destruction to life, surgical elimination is of great benefit. Thus nature can cure tuberculous peritonitis in pure form. Mixed infection destroys tissue, but added toxins are destructive to life as well as to tissue and are more chronic and difficult to treat or control. If ascites in tuberculous peritonitis adds so enormously to the surface area involved in a tuberculous process and must be overcome by changes in the peritoneum by changing the exudate from serous to fibrinous and plastic adhesion before cure occurs, such surgical treatment as will hasten the process is advisable. The important question is with regard to the permanency of cure and restoration to health. Death or even ill health rarely comes from obstruction due to the adhesions. When acute obstruction develops it is due to a single band or the hyperplastic variety without ascites. By removing the focus of disease in tuberculous peritonitis, especially when such a focus involves a tuberculous mucous membrane, a high percentage of permanency of cure with a very low primary operative mortality is secured.—*Tuberculous Peritonitis, C. H. Mayo, Minnesota Med., April, 1921, iv, 259.*

Dyspepsia from Pott's Disease.—A woman of forty-two suffered for two years from dyspeptic trouble. She had diminished appetite, fulness and pressure immediately after meals; after twenty-five minutes a sore feeling followed by cramps which radiated to the region of fifth to seventh dorsal spines; eructations, and after three to four hours epigastric burning which lasted a few minutes. Then she was fairly comfortable until the next meal, with only a vague feeling of dragging and emptiness of the stomach followed by general lassitude. As dietetic and medicinal measures had proved ineffective, she entered the hospital. There a tuberculous spondylitis of the fifth to seventh dorsal vertebrae was found with marked local pain and tenderness, without deformity, but with stiffness of spine and a positive X-ray picture. After a plaster corset had been applied, the dyspeptic symptoms disappeared as if by magic, together with the dorsal pains. The authors apply the term gastroradiculitis to this splanchnic irritation from Pott's disease.—*Gastro-radiculite d'origine pottique, F. Ramond and C. Jacquelin, Progr. Méd., April 9, 1921, no. 15, 155.*

Diagnostic Value of Tuberculin in Surgical Tuberculosis.—Ninety-nine patients were tested first with the Pirquet test and, if positive, with 1, 5 and 10 mgm. of O. T. subcutaneously. *Conclusions:* 1. A positive focal reaction is obtainable in only two-thirds of cases of surgical tuberculosis. Closed cases react more frequently than those with fistulae or abscesses. Occasionally a certain case of tuberculosis reacts focally but not constitutionally. Healed cases do no longer give a focal reaction. 2. A focal reaction which is only subjective must be accepted with great caution. 3.

If all tuberculin tests are negative, tuberculosis can be excluded with certainty; if temperature and focal reactions are absent, but the puncture reaction is positive, tuberculosis can be excluded with great probability, or healing can be assumed to have taken place. 4. An absent focal but positive temperature reaction does not speak against tuberculosis. In these cases the onset and cause of the temperature may have a limited diagnostic value. 5. The tuberculin test, carried out systematically and cautiously, is a valuable and harmless diagnostic help.—*Die Tuberkulindiagnostik in der chirurgischen Tuberkulose, C. Mau, Deutsch. Ztschr. f. Chir., March, 1921, clxi, 145.*

Tuberculous Meningitis in Adult Consumptives.—Tuberculous meningitis is discussed, as it occurs (1) in children and (2) in adults, (a) with more or less extensive pulmonary tuberculosis or (b) with previously good health. This makes possible the isolation of the factors which a concomitant pulmonary tuberculosis adds to the symptomatology and course of the disease. Between 1910 and 1919, 30 cases of tuberculous meningitis were observed in persons over the age of sixteen. Fourteen cases are analyzed in which the diagnosis was confirmed by autopsy. Twelve of these patients were in the third stage, and the remaining two in the second stage of pulmonary tuberculosis. Three typical cases are reported. Delirium was characterized by its quietness. The changes in the pulse rate were not constant and may have been obscured by the preexisting pulmonary disease. In some cases, retention of urine and feces occurred. The two cardinal symptoms, cervical rigidity and Kernig's sign, were not invariably present. In several cases rigidity of the neck was present one day and completely absent the next. Headache was the most constant symptom, but in several cases it was intermittent. Vomiting was common. The symptom which dominates the clinical picture after the disease is well developed is drowsiness. Tuberculous meningitis in adult consumptives cannot be regarded as latent. There is a definite difference in the clinical picture of tuberculous meningitis in children and in adult consumptives. The extent and distribution of the disease appear to have little effect in determining the severity of the symptoms. In some cases the terminal stage of toxemia in pulmonary tuberculosis may evoke a clinical picture indistinguishable from that of tuberculous meningitis without the aid of lumbar puncture.—*The Symptoms and Course of Tuberculous Meningitis in Adult Consumptives, C. Holten, Tubercle, January, 1921, ii, 150.*

Psychogenic Pseudotuberculosis.—Several years ago a young woman of unusually sound health received the news that a relative had dropped dead. She bore the experience with fortitude and was soon back at her occupation. However she rapidly developed a syndrome of acute phthisis with progressive emaciation, cough, and night sweats, so that her physician on her first visit to him was almost convinced that she was tuberculous. He deferred giving his opinion until the next visit, when he found the patient quite free from symptoms, and the psychogenic nature of the latter became apparent when the patient later presented another syndrome of cardiac stasis, which passed off and left her in her usual health. During the latter experience she had gone about her daily business with ankles so swollen that she could not button her shoes. Both syndromes cleared up spontaneously.

In the November 13 number of the *Bulletin Médical* (xxxiv, 53) de Fleury has a paper on false tuberculosis of psychopathic nature and a comparison of his findings with the above mentioned case should be of interest. This author sketches his type as follows: At the tuberculous age a young man or woman begins to decline in health which, let us say, has never been robust. There is a condition of lassitude, fatigability, and anemia which disquiets the relatives. The patient seems to slip into the state of tuberculosis. But this type is not the one which really interests the author. There are young people whose health is vigorous and whose high spirits make them conspicuous, who shock their friends by passing without warning into a state of malnutrition. In such cases the author expressly states that no psychic shock or vexation has preceded the symptoms, no physical overstrain, nothing to accuse in connection with the sudden failure of health. Relatives and friends become alarmed and summon medical counsel. Examination proves negative. The condition progresses and in some respects suggests Graves's disease, presenting symptoms common to both it and incipient tuberculosis, such as tachycardia, sweating, etc. Tremor may be marked. The patient is impressionable and becomes badly frightened over his condition. The symptoms are conflicting enough. Fever may be absent. Low blood pressure is usually found. To give the patient the benefit of the doubt he is given sanatorium treatment under which he does not prosper. He cannot be made to gain a pound and his neurotic symptoms seem out of proportion to the disturbances of general health. One might term the patient a tuberculo-neurasthenic with his peculiar mental state, insomnia, tremor, etc. A consultation held between an expert phthisiolo-

gist and neurologist will bring out the fact that the condition is purely neurotic. The cough is a nervous cough and the subject can be diverted so that it will disappear. Tachycardia, night sweats, anorexia are all psychogenic. The condition of hypochondria is the very reverse of the optimism of the tuberculous. The author especially states, however, in connection with the mental depression, that it may be cyclothymic and be followed by a wave of mental exaltation. During this phase the tuberculous syndrome recedes. Under the circumstances one might wrongly conclude that the patient's optimism was the direct result of recovery. It is evident that these endogenous cases of de Fleury have hardly anything in common with the case cited by the editor in which a very shortlived imitation of beginning tuberculosis occurred in a nonneurotic subject as the result of psychic trauma.—*Editorial, Med. Rec., January 29, 1921, xcix, 189.*

Involvement of Genitourinary Tract in Active Pulmonary Tuberculosis.—During eleven months of Peterson's service at Fort Bayard, the patient population varied between 800 and 2000, practically all in the original draft age (from twenty to thirty years). Approximately 80 per cent of the patients had active pulmonary tuberculosis; the remainder were sent there for observation. Peterson demonstrated only five cases of surgical tuberculosis of the kidney, in only three of which was there active lung involvement. One man had bilateral renal tuberculosis and one had a unilateral renal tuberculosis and tuberculous epididymitis, with no active pulmonary lesions. Involvement of the epididymis was observed in three cases. On one man an epididymectomy had been performed elsewhere and a fistula persisted. One man had bilateral involvement, and in one an acute abscess developed, destroying both the epididymis and testicle. A castration was done and the wound healed in three weeks. Two months later the patient died from an acute tuberculous pneumonia. At necropsy the kidneys were free from tuberculous invasion. The prostate showed a caseated abscess and there was a cold abscess at the stump of the cord following the castration, which had not pointed to the surface. At necropsies massive lung lesions were always found—old multiple cavities filled with pus, cheesy material and necrotic tissue and large walled-off cavities with very extensive destruction of tissue. These old types of lesions were now and then associated with a fresh general miliary distribution, both into the remaining functioning lung tissue and into the peritoneum and abdominal viscera. Except in cases where acute miliary tuberculosis was the immediate cause of death, the genitourinary tract was rarely involved in the infection, and here the lungs showed old massive lesions, while the lesions in the kidneys were of the young or miliary type.—*Involvement of Genito-Urinary Tract Associated with Active Pulmonary Tuberculosis, A. Peterson, Cal. State J. of Med., January, 1921, xix, 18.*

Vaginal Tuberculosis.—The disposition to genital tuberculosis is greater in the female than in the male; in most cases the lungs are coincidently involved. It occurs in the following order of frequency,—the peritoneum, intestines, and last the genital organs. The highest incidence is during the ages of twenty to thirty years. Any part of the genital tract may be involved separately or combined. The tube is the most frequent site of involvement, then the ovaries, cervix and last of all the vagina.—*Über Vaginaltuberkulose bei weiblicher Genitaltuberkulose, T. Poetz, (Inaug. Diss., Bonn, 1919), Zentrabl. f. Chir., 1920, xlvii, 359.*

Genesis of Tubal Tuberculosis.—Tuberculosis of the Fallopian tubes is a secondary disease. It results as a rule from an influx of bacilli from the peritoneum, or by continuity from the uterus, or from distant foci by way of the blood or the lymphatics. Tuberculous peritonitis is the most common source of tubal tuberculosis and usually leads to an infection of the tubal mucous membrane, whereas hematogenous infection involves the deeper tissues primarily. Of 222 postmortems on women, 50 with florid tuberculosis, the tubes were involved in 15 or 30 per cent which is a much higher percentage than that reported previously in the literature. The incidence of tubal tuberculosis was greatest in the thirty to forty year period of life. Fifteen cases are tabulated. The ages of most of the patients varied from thirty to sixty; one each was respectively five, six, seventeen, twenty-six and seventy years old. Tubal tuberculosis was found associated with pulmonary tuberculosis in 15 cases (100 per cent), with intestinal tuberculosis in 14 (93 per cent), with tuberculous peritonitis in 12 (80 per cent), with genitourinary tuberculosis in 1 (65 per cent), with generalized miliary tuberculosis in 4 cases (27 per cent).—*Ein Beitrag zur Frage über die Genese der Tubentuberkulose, V. Kafka, Arch. f. Gynäk., 1920, cxiii, 490.*